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THE
INVENTORS' ADVOCATE;
AND
JOURNAL OF INDUSTRY;
A BRITISH AND FOREIGN MISCELLANY
OF
INVENTIONS, MANUFACTURES,
TRADE, SCIENCE, AND THE ARTS.

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ON THE PATENT LAWS OF ENGLAND.

(Continued from Page 305, Vol. I.)

SHOULD SPECIFICATIONS BE CONCEALED?

EVERY British patentee is required by the letters patent, particularly to describe and ascertain the *nature* of his invention, and in what *manner* the same is to be performed, by an instrument in writing under his hand and seal, and cause the same to be enrolled in the High Court of Chancery within the time thereby limited; and if he fail to fulfil that condition, his patent becomes void. Many persons, but particularly *dishonest jobbers*, have cavilled at this provision:—*they* wish to monopolise the exclusive right to a manufacture for fourteen years, without paying that price to which the public are fairly entitled, viz., a complete and open specification of the invention, and the mode of performing it. If specifications to patents were allowed to remain secret, the most extensive and pernicious frauds would be continually inflicted on the public; for there are persons who would not only filch inventions, produced by others after much mental and manual labor, but who would not hesitate even to swear that they were the first and true inventors thereof, believing that, under the refuge of a concealed specification, they would, for a time at least, elude detection. We boldly deprecate any system which would exclude the public from the knowledge of the invention during the term of the patent right. There are indeed those who would secretly cull the *real* advantages of patents, to the prejudice of the meritorious inventor; and to *them* we are an offence, because our vigilance for the true and permanent interests of inventors and patentees, is too alert for their patent manoeuvres. It has been insinuated by some, who thrive on talent not their own, that we exhibit hostility to the best interests of inventors by publishing their specifications in our journal; but find us the *honest* patentee whose sentiments coincide with that abandonment of truth, and we will listen with attentive pleasure to his suggestions. No, that will not occur; our interests are identified with those of inventors and patentees, and we have pursued a course which will best promote them: we disregard the favor which is not hallowed by principle. We are the *Inventors' ADVOCATE* and *Patentees' RECORDER*; and for their benefit we devote our energies, nor will we purchase conciliation from those whose plans are inimical to the due reward of inventive genius, by the sacrifice of our duty:—we have made our stand, and, hailed with cheering satisfaction, we per-

severe. If specifications were concealed, the public would have no security that the patentee had *faithfully* described the nature of the invention, and the manner of performing it. After the patentee has monopolised the right for a period of fourteen years, it might occur that he had not disclosed half his process, and the public would *then* be without the full benefit of the discovery, for no person would be able in the interim to detect the wilful frauds which would be thus constantly committed, because the contents of the specification would not be publicly known. Another evil would also result from concealed specifications, viz. liabilities for *innocent* infringements of patent rights. If the specification be not open to public inspection, a man who has invented a machine similar to that for which the patent has been granted, cannot ascertain whether he can work it with safety, or whether the patentee has claimed any part of it as his invention; and after he has expended much labor and money in maturing that of which he considered himself the *first* inventor, he may discover that it has been included in some *sealed* specification, and that he must either abandon his manufacture or incur the expense and annoyance of anxious litigation. The reason generally assigned on the application to parliament for an act that the specification may remain concealed, is the impolicy of allowing foreigners to adopt the invention, but this suggestion is seldom “the truth of the matter:”—if the patentee succeed in procuring the act, he is generally the first to violate its intentions, for having thus excluded the fear of competition in a foreign country, he proceeds thither, and unsparsingly exacts the highest extortion for his invention, for which *he*, who prayed that his specification might remain secret to prevent foreigners acquiring it, then treacherously secures a foreign patent! Thanks to our legislature, however, we have but few instances in which specifications have been concealed by their authority.

In 1792 an Act was passed for more effectually securing to Joseph Booth and the public, the benefit of an invention of a machine, or apparatus, and certain chemical compositions, for making various kinds of woollen cloth, for which he had obtained patents, but had not enrolled the specifications thereto. The patents for England and Scotland contained the usual condition of enrolling a specification within four months. To prevent the invention getting to foreign countries, the Act allowed him, instead of enrolling within four months, to deliver his specification within eight months, to the Lord Chancellor, who was required to appoint two persons to examine the process therein described; such persons making oath not to divulge the process, and the examiners were to answer all ques-

tions which should be at any time afterwards demanded of them by the Lord Chancellor respecting the same, and to return the specification, altered and amended, if need be, to the Chancellor, with an affidavit by them and Booth, that the specification fully and accurately defined and described the whole invention and discovery, and the method of using the same. The specification and affidavits were then to be enclosed in a cover, under the seal of the Chancellor, and lodged in the office of one of the Masters, nominated by him, and the packet was not to be removed from such custody, on any pretence whatever, except by the Chancellor's order, who might open the same if required, on account of any application for patents for inventions of a similar nature, or of any trial at law; and after such use the packet was to be again sealed and deposited with the Master, to remain there until the end of the fourteen years' term, and then the specification was to be enrolled as in other cases. We find that in 1813 an Act was also passed for securing to James Lee, and the public, the benefit of his invention of certain new methods of preparing hemp and flax, by enabling him to lodge the specification under certain restrictions. J. Lee had obtained patents for the invention in 1812, for England, Scotland, and Ireland, with provisos that specifications thereto should be enrolled within fifteen months of the respective dates; but as foreign agents might procure copies thereof if so enrolled, and by sending them abroad enable foreigners to exercise the invention before the King's subjects could by law use the same here, the patentee was directed, instead of enrolling the specification, to deliver the same to the Lord Chancellor, with an affidavit that the whole of the invention and the method of using the same were therein described. The other conditions were similar to those contained in the Act already referred to, except that a copy of the specification was required to be deposited with the Lord Chancellor for Ireland, and another with the Lord Chief Baron of the Exchequer in Scotland, under corresponding restrictions.

The several packets so deposited were to be retained until the expiration of seven years from the passing of the Act, and then enrolled by the persons having the custody thereof, and by the patentee or his representatives, in the Courts of Chancery in England, Scotland, and Ireland, as directed by the patents respectively. We believe that these are the only Acts which have ever passed the British legislature for a limited suppression of a specification to letters patent for inventions for new manufactures, and we do not anticipate that we shall have to record any addition to the number,—for any provision, which would tend to conceal from *public* inspection the specifications to patents, would in-

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duce unlimited fraud, stifle the activity of inventive talent, and materially check our international commerce.

A Bill, which was brought into the House of Commons, in 1819, to conceal the specifications of all inventions for which patents might be granted from public inspection, in order that the inventions might not be sent abroad, was immediately thrown out; and it was stated by Lord Chancellor Eldon, in a case on Koop's patent in 1802, that a clause to the same effect which had been inserted in a Bill before parliament in 1801, on the motion of Lord Thurlow, and seconded by Lord Rosslyn, was also unanimously rejected.

We admit the defects in our patent jurisprudence in many important particulars, and shall unceasingly apply our exertions for their amendment; but we know that *honest* possessors of patents are ever anxious to submit their inventions to the public for their approval and adoption, and are assured that by impartially proclaiming the ingenuity and utility of the perspective "manufactures," by the publication of their specifications in our Journal, as they are successively enrolled at the various offices, we shall secure the most valuable advantages to patentees, and the permanent approbation of all classes.

(To be Continued.)

VARIOUS METHODS OF DRYING, USED IN MANUFACTORIES.

In bleaching grounds, and in the establishments of dyers, calico-printers, paper makers, manufacturers of starch, glue, &c. &c., there have been used hitherto eight methods of drying, not only spun and woven goods, but productions of every kind, whether natural or artificial, agricultural or manufactured.

1—Drying in the open air. 2—in cool fresh air, produced by means of ventilators. 3—by hot air kept at the same temperature. 4—by hot air in a close vessel. 5—by fire. 6—upon cylinders heated by steam. 7—upon cylinders heated by fire. 8—drying, or rather evaporation of the moisture, by centrifugal force.

Each of these methods is, or is not, preferable to the others, according to the particular occasion. There is no fixed principle on the subject.

Drying in the open air, in high airy drying places, is the only method really suitable to almost every branch of industry; but in our latitudes it is only available four or five months in the year. It requires also considerable space, which prevents its being generally adopted, and it causes besides a great deal of manual labor, which is a very slow process. Nevertheless, it is the most economical method, and never injures the substance put out to dry, except it is of such a kind as to ferment when the evaporation of the moisture is too slow.

Calico-printers, bleachers, and dyers have drying places in the open air, which they use in suitable seasons. The goods are spread upon a railing from 15 to 20 yards high; on the top bar of which they are hung.

Paper-makers have also drying lofts open to the air, but they are several stories high, and the paper is hung to dry in sheets upon a line. Paper hangings which are made upon cylinders, cannot be thus dried.

The manufacturers of fecula, starch, vermicelli, glue, gelatine, and other chemical productions, likewise make use of drying places open to the air, but they are not so high, and the articles to be dried are spread upon hurdles or tables. Sometimes it is useful to dry quickly grain that has been wetted, such as wheat, barley, or rye, whether it has been wetted accidentally or washed and rubbed to cleanse it when it is mildewed or mouldy; generally it is put on the ground or on the floor of a granary, and turned about with shovel, so as to expose every part of it to the air; but it would be better to place

it in a cylinder, and expose it to the action of the air by turning the cylinder more or less quickly, till the drying is completed. In this manner, the grains that are most wet are rapidly dried, without at all injuring their quality.

Thus we see that drying by means of atmospheric air is suited to many purposes; unfortunately it is practicable only when the atmosphere is not saturated with moisture, and the temperature not under 12 degrees, that is to say, from May to September. Sometimes, however, the months of March and April may be included, when the air being dry and blustering, makes up for the want of warmth.

Second method.—When the nature of the article requires that it should be dried in a low temperature, and in all seasons, for instance, when it is wished to dry glue, gelatine, fecula, or beet-root which has been cut in slices to preserve it, it should be placed in a current of fresh air, the temperature of which can be regulated at pleasure by means of the ventilator of Desaguliers or better still, the ventilator of Combes, which is more easily worked.

In this case, the articles to be dried must be put in an enclosed space which the air can fill from one end to the other, as it is admitted or passes out by the ventilator.

Third and fourth methods.—In winter, dyers, calico printers, and bleachers, make use of hot air to dry their work. For this purpose they have large buildings or drying houses entirely of brick, and arched, and the walls of which are from 45 to 66 centimetres (14 to 22 inches) thick. The drying rooms should be from 7 to 12 yards wide, and from 4 to 7 yards high to the point where the arch begins, and long in proportion to the quantity to be dried. The doors and windows should be few, in order to concentrate the heat as much as possible. In general, at each end of the drying room, and on the outside, there is a stove with a coal fire; the flame passes immediately from the grate of the stove into a horizontal cast-iron pipe, the diameter of which varies from 25 to 40 centimetres (8 to 13 inches); this pipe is laid upon the floor, and extends the whole length of the drying-room, and it terminates in a vertical chimney, through which the flame passes into the open air. When the drying room is small, one stove is sufficient; and the pipe goes all round, and terminates in a chimney on the same side as the stove. These drying-rooms should not be too high, for in the first place this would cause a great increase of labor; and secondly, as the hot air has a natural tendency to ascend, it might happen, and sometimes has happened, that stuffs have not only been quite dry, but injured at the top by too much heat, whilst at the bottom they were not dried sufficiently.

There are various opinions about which is the best plan of drying by hot air; some think that there should be a constant circulation, and that it should be renewed in proportion as the moisture evaporates, in order that every particle of humidity may be exhaled by the air from the wet stuffs. Many practical men, as well as theorists, are of this opinion. Others, on the contrary, maintain that a drying-room should be made into a sort of vessel hermetically closed, which from its size should be capable of containing all the moisture from the wet stuffs, when turned by the temperature of the air into steam or vapor, or the evacuation of which, the process of drying is complete. This plan is supported by many practical men also, and latterly by M. A. Penot, of Mulhouse, who has made many experiments on the subject.

M. M. Scheurer and Henry Schlumberger, of Mulhouse, visited the manufactory of Mr. Walter Crume, near Glasgow, who has adopted the latter method; and he assured them he could dry in this way two hundred pieces of wet linen in three hours, while it would take five hours to dry them if the hot air were constantly renewed. M. Penot's experiments were made in consequence of the information received from these gentlemen.

It should be remarked, however, that this method of drying has been in use for many years at St. Quentin, and amongst some of the dyers who occupy the valleys around Rouen.

EXPIRED PATENTS.

A LIST OF PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING DECEMBER 28, 1839.

ENGLAND.

JOHN McCURDY, Cecil-street, Strand, *improvements in generating steam*, Dec. 27.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO THE WEEK ENDING DECEMBER 28, 1839.

(Continued from our last.)

ENGLAND.

The Government offices being closed during the holidays, we are unable to give any Specifications this week.

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[The following was omitted by the Clerk of the Patents in our August monthly list of Patents Sealed, page 36, vol. i.]

William Colchester, of Ipswich, merchant, for an improved soap-frame, 6 months, sealed July 29, 1839.

A vein of quartz, which contains numerous particles of gold, has been found in Russia. The spot is situated at the foot of Mount Tagilisch, ten versts from Nishnesaldinsk, near the stream of Nadporochnaya, which falls into the Tagil. The local authorities have apprised the minister of the interior, of the discovery.

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JOURNAL OF INDUSTRY.

FOREIGN CORRESPONDENCE. (FROM OUR OWN CORRESPONDENT.)

FRANCE.

MEETING OF THE ACADEMY OF SCIENCES, PARIS,
DECEMBER 16, AND DECEMBER 23.

(Continued from No. 19.)

M. de Blainville, read a discourse upon the cervical vertebrae of the *Haii*,^{*} an animal of the bradypus or sloth genus, which has nine vertebrae in the neck, instead of seven, like all other animals of the class mammalia, whatever may be the length of the neck. The giraffe, for instance, whose neck is as long as its body, has only seven cervical vertebrae, in common with animals of the cetaceous order, and even with the *lamentin*, whose neck is so short as to be scarcely visible.

M. Colin stated the results of some fresh experiments on *polygonum tinctorium*; from which it appears, 1st, that oxygen is necessary to the production of indigo blue. 2d, that the presence of an acid facilitates its formation.

M. Libri presented a paper, containing remarks upon some manuscripts of Fermat, which he has discovered, and which are now in his possession. Appended to the paper is a fac-simile of the handwriting of this great geometer. This may render more easy the search after his other manuscripts, the loss of which is a misfortune to science.

M. Pambour communicated the result of his inquiries relative to the effect which the inclination of railroads has on the speed of locomotives.

According to his calculations, an inclination of ten millimetres a metre (about 47 feet a mile), would not increase the speed beyond eighteen leagues an hour, which does not exceed the maximum of speed on a perfectly level railway.

M. Decoupius has sent from Rome some observations upon the spots in the sun; according to this astronomer, a considerable alteration in the position of one of these spots took place even whilst he was making his observations.

M. Turpin read an essay upon milk and butter. Many of his statements appeared erroneous; but I shall confine my strictures to one. He maintained that on the surface of milk, however thoroughly skimmed or strained, there is always a number of small globules, which give to the serum its whitish and opaline appearance; that without them it would not curdle even after being kept a long time, and that the curdling is produced by the vegetation of these globules. Now I imagine that milk might be produced in which after being skimmed and strained, the best eyes, with the assistance of the best microscope, could not discover the least trace of these globules; and that after being kept some days it would curdle, not from these imaginary globules vegetating, but from the deposit of the curd as the milk turns sour.

M. Orfila and M. Couerbe. The proceedings in a late criminal cause attest the importance of M. Orfila's anatomical researches as applied to judicial investigations.

It is not always possible to discover the traces of arsenic in the stomach of persons who have been poisoned by this mineral. The greater part of the poison may be rejected, and the rest absorbed by the other organs; and thus science has hitherto been incompetent to enlighten justice, and crime has often escaped with impunity for want of proof. M. Orfila conceived the happy idea of searching elsewhere for the poison than in the organ which originally received it, and of pursuing it through the texture of the body, the flesh, the liver, the blood &c., when unable to discover it in the stomach. The present perfection of chemistry, and the apparatus of Marsh, which M. Orfila has turned to so useful a purpose, now enable the surgeon to detect the smallest trace of arsenic with the greatest certainty. But in order to prove that poison has been

administered, it must be ascertained whether the different organs of the human body do not contain arsenic naturally; and it has been satisfactorily shown that very minute quantities of this substance really exist in the bones, and perhaps also in the flesh and viscera of the human body in its normal state, independently of all accidental circumstances. But some very accurate experiments of M. Orfila tend to prove, that the presence of this natural arsenic, if it may be so called, can never be detected by the same means which are used to detect the presence of arsenic in the system administered as a poison.

M. Couerbe, a young and eminent chemist, has submitted his claim to the Academy, as being the first who discovered the natural presence of arsenic in bodies which were in a state of putrefaction, or which had been long inhumed. It does not however appear that this claim was ever denied by M. Orfila. In his original statement to the Academy, he said, "M. Couerbe has shown that a certain quantity of arsenic develops itself in human bodies whilst putrefying; I have since demonstrated the presence of this mineral in all dead bodies, whether fresh or in a state of putrefaction." The merit of applying these discoveries to judicial investigations belongs wholly to M. Orfila.

Prison discipline.—M. Charles Lucas lately communicated to the Academy the third report of the Society of Boston, on the effects of solitary confinement in the Philadelphia penitentiary. This report contains facts worthy of the most serious attention. Crime, instead of decreasing, spreads to such an extent as to require an addition to the buildings of the establishment.

The proportion of those who relapsed into crime at Auburn, is 1 in 12; at Philadelphia 1 in 10. The number of deaths at the latter place is double what it is at the former.

Among 678 prisoners at Auburn in 1837, there occurred no case of insanity. In the same year, at the Philadelphia penitentiary, among 387 prisoners, there occurred 14 cases of insanity arising from solitary confinement. In a financial point of view, whilst the result of working together in shops produces more than enough to cover all expenses both of management and maintenance, the result of working singly in cells at Philadelphia has left a deficit for the year 1837 of 10,272 dollars in the article of maintenance only, for the state has been forced to take upon itself the cost of the management. In short, the report of the Boston society terminates thus:

"In conclusion, the last report of the Philadelphia penitentiary is the most unfavorable to this establishment that has yet been published; unfavorable, whether we look at it in respect to cases of death, of insanity, of relapse into crime, or in respect to the expenditure, and the moral and religious instruction."

Astronomical Prize.—The Royal Institute has just awarded the astronomical prize, founded by La Lande, to Colonel Brousseau, on the completion of his great undertaking; viz. the measurement of a segment of the mean parallel circle between the Pole and the Equator, comprehending the space between the towers of Cordouan and Fiume.

This measurement increases our knowledge of the real form of the earth.

The colonel has printed, at his own expense, a voluminous and minute account of his labors during the fourteen years he has been employed upon this work.—(See "Inventor's Advocate," No. 19.)

FOREIGN COMMERCE OF FRANCE IN 1838.

(Concluded from our last.)

Table VIII.—NATURE OF MERCHANDISE EXPORTED.

Here, when the objects are arranged in two classes only, viz. natural produce and manufactured articles, the total value of the general com-

merce, 956,000,000 frs., is divided between these two classes in the proportion of 35 to 65, exactly the same proportion as in 1837, when the totality of exportations did not exceed 758,000,000 frs.

The increase resulting from the double comparison has been nearly the same with regard both to natural produce and manufactured articles, principally as far as concerns the exportations of 1837 compared with those of 1838.

For special commerce, natural products are 28, and manufactured articles 72 per cent. of the totality of exportations, 659,000,000 frs. Compared with 1837 and the decennial average, the exportation of the former has increased 22 and 26 per cent., and that of the latter 31 and 27 per cent.

Table IX.—KINDS OF MERCHANDISE EXPORTED.

This table shows the part taken by each kind of merchandise, as far as regards our exportations.

Woven silks occupy the first rank; the value amounts, for general commerce, to 176,000,000 frs.; and for special, to 139,000,000 frs. They form alone more than one-fifth of our exported produce (21 per cent.)

Woven cottons and wools take the next place. At no period has the exportation of these been so considerable as in 1838. The value of woven cottons is 114,000,000 frs. for general, and 80,000,000 frs. for special commerce; of the wools, 79,000,000 frs. for general, and 64,000,000 frs. for special commerce.

Our wines, the exportation of which diminished in 1837, reached in 1838 the same amount as in 1836, viz. 51,000,000 frs. Compared with the decennial average, this article has increased 10 per cent.

Wine-brandies (*eaux de vie de vin*) from our distilleries are stated, among exportations, at a larger sum than in 1837; but a comparison with the decennial average shows a decrease of 19 per cent.

Of 20,000,000 of corn comprised by the general commerce, 10,000,000 are the produce of our soil. This, as far as concerns special commerce, is 55 per cent. more than in 1837.

We have exported 28,000,000 of woven flax and hemp from our manufactories. By adding to this sum the value of similar articles of foreign industry, which have been in transit through our territory, the total of exportations is 47,000,000.

In 1837 linen only figured, as to special commerce, for about 1,000,000; but in 1838 it rose to more than double that sum. For general commerce, the exportation of this produce presents an increase of 87 per cent.

The diminution in 1837 in the articles known under the general denomination of "sundry articles of Parisian industry," is again to be remarked in 1838. Among exportations, these articles only figure at 4,500,000, which is nearly a quarter less than in 1837.

Our exportations in perfumery, salt meat, drugs, and colors, present greater or less diminution, compared with the preceding year.

Among other articles of merchandise, those for which a comparison with 1837 shows the greatest increase, as regards special commerce, are seed and table fruits, madder, goldsmiths' articles, and jewellery, gold beaten, in wire and leaf, soap, articles of fashion, salt, refined sugar, and manufactured skins.

Table X.

Shows us, under the triple relation of value, weight, and country (both of produce and destination), the *résumé* of the movement of our transit commerce.

Value.—The whole amount of value which has been in transit is nearly 183,000,000, which is 24 per cent. more than in 1837, and 34 per cent. more than during the anterior period, taken as a term of comparison.* Altogether the transit commerce has not been in 1838 of the same importance as in

* For certain reasons, the decennial average is not taken for the transit commerce.

* *Haii* is a name given by the Brazilians to the three-toed sloth, because its voice seems to express some such sound.

1836, a year in which it embraced a total value of 204,000,000.

The merchandise to which the increase compared with 1837 has especial reference, consists of silk, iron, steel, woven silk, cotton, wool, and cochineal. For wool and refined sugar there is, on the contrary, a diminution.

WEIGHT.—Considered as to weight, the transit has, on the whole, amounted to 310,734 quintaux metriques, giving an increase of 3 per cent. on 1837; but, compared with the average of the preceding period, the increase has been 37 per cent. In 1836, when this commerce was more important, the weight of the merchandise which was its object, amounted to 340,000 quintaux.

Cottons are entered for nearly a quarter of the total weight of merchandise in transit. A comparison with 1837 shows an increase of 22 per cent. on this article.

After cottons, the transit of steel and iron is of the greatest interest: they are stated at 40,000 quintaux metriques.

The weight of silk has exceeded by 35 per cent. that of the same sort of merchandise in transit in 1837.

Diminutions of 45 and 41 per cent. are to be observed in the transit of refined sugars and wools. Coffee has also decreased, although amounting to 32,000 quintaux metriques.

COUNTRIES WHENCE THEY ARE BROUGHT AND WHITHER THEY ARE SENT.

If we look to see in what proportion the 183,000,000 values, forming the object of transit commerce, are divided, we shall find, considering this commerce with reference to the country whence the articles are bought, that Switzerland supported it in the greatest proportion (25 per cent).

Considered in the same relation, to the Sardinian states and England are assigned the second and third rank. Germany and the United States come next. A comparison with 1837 gives results in favor of 1838, with reference to each of those Powers.

Prussia has only furnished the transit commerce values of 7,000,000, which is 32 per cent. less than in 1837, and 23 per cent. below the average of the anterior period.

Regarding the same commerce according to the country of destination, the first circumstance to be remarked is the considerable increase in the transit to England. The value of merchandise received by that country has amounted to 46,000,000, a sum equal to a quarter of the total value of the transits in 1838.

Switzerland has received, of merchandise in transit, 49,000,000 of value, and has thus had a part in this commerce even greater than that of England. As in 1837, Switzerland is the country to which the most merchandise in transit has been sent via France.

Considered in this respect, Spain and the United States hold the third and fourth rank. The fifth is held by the Sardinian states, and the sixth by Belgium.

Table XI.—ENTREPOTS.

The total value of merchandise entered in the entrepots of the kingdom is 534,000,000, and the weight is 6,375,000 quintaux metriques. A comparison with 1837 shows in favor of 1838 an increase in value of 11 per cent., and an increase in weight of 9 per cent. Compared with the average calculated in the years 1834, 1835, and 1836, the increase has been 12 per cent. in value, and 26 per cent. in weight.

The entrepot of Havre has surpassed that of Marseilles as far as regards value, though, as to weight, the latter continues to hold the first rank. It received, in 1838, 2,500,000 quintaux of merchandise—that is to say, more than 39 per cent. of the total weight of merchandise placed in entrepot; while, compared with 1837, the increase has been 6 per cent. At Havre the increase in value has been 21 per cent., and in weight 30 per cent.

The entrepots of Metz and Calais are those which show the greatest increase in value; in weight the entrepot of Nantes shows the greatest increase;

and the entrepots of Paris (*Île des Cygnes*), Bayonne, and Orleans, the greatest decrease.

BELGIUM.

M. NOTHOMB'S REPORT ON THE RAILROADS.

A report has been made to the Chambers, of the present condition of the railroads and other roads of Belgium. This document is remarkable in many respects, and is interesting not only to the Chambers, but to the public. The information which it gives, is well arranged, and the general inferences to be drawn clearly stated; but there are one or two points omitted, to which we are desirous of calling the attention of our legislature.

The minister congratulates himself in this report, on the fact that Railways have been a great political advantage to the country. "They have caused," says he, "at one and the same time, Belgium to entertain a high opinion of herself, and foreigners to entertain a high opinion of Belgium. At the period of the revolution the eyes of all Europe were fixed upon her; and Belgium was in danger of being lost in the crowd of small nations: she maintained her station by a grand physical effort. She continues to be the subject of conversation, and that is a great point gained. Nations, like individuals, should have some object prominently in view. The present objects of Belgium, are her railroads; they are a national concern."

We certainly join most cordially in the patriotic feeling which dictated these expressions of the minister; like him, we are proud to see our country foremost in establishing this new branch of industry, and we give every credit to the government for its active support; but still we cannot but consider the gratification of national self-love to be a point of very secondary importance. The real and obvious advantage of railroads is of a much more valuable character. In Belgium the object is twofold. In the first place, to increase our commercial relations and transactions; in the second, by promoting a more extensive intercourse and interchange of ideas among men, to facilitate the amalgamation of the different portions of our territory, and to render as it were, the inhabitants *homogeneous*. To attain this object will indeed be to our advantage; to attain it without expense to the state, will be to our honor. The ambition of being a subject of conversation is a bad motive even in politics, but certainly worse in matters of industry. The glory of Belgium is in her prosperity; she will always be sufficiently honored when her children are happy.

We have already stated that we think no railroad can be made a lucrative undertaking in the strict and positive sense of the term, and as yet we see no reason to alter our opinion; but before this question can really be determined, we must wait till the several lines are finished, and a correct account given both of the total expenses of the formation, and of the receipts and disbursements for a year after they are opened; and it will be two years and a half, at the soonest, before this can take place. In the meantime, we give as a statistical document a succinct analysis of the voluminous return of M. Notchomb.

LINES OF RAILWAY.

The law of May 1st, 1834, authorised the formation of several lines of railway, of which the central point was to be Malines, and the whole extent 397,106 metres, or 79½ leagues of 5,000 metres each. (*Leagues of Brabant*).

1. Towards the East. By Louvain, Liège, and Verviers, to the frontiers of Russia, a distance of metres. 136,363
2. Towards the North. To Antwerp, with a continuation to the Escout 25,500
3. Towards the West. By Termonde, Ghent, and Bruges to Ostend 127,111
4. Towards the South. By Tubise, Soignies and Mons, to Quiévrain on the frontiers of France 108,132

Total metres 397,106

The law of May 26th, 1837, authorised the formation of three fresh lines.

1. That of Ghent, to the frontiers of France and Tourney, a distance of 75,100
2. That of Namur 66,074
3. That of Limbourg 10,802

Total metres... 151,976

Thus the extent of the several lines authorised by the Chambers was 549,082 metres, or 110 leagues; of this 62 leagues only are completed, and are open to the public, making .. metres 309,291

In progress 43,453

Not begun 196,338

More than one third, therefore, of the distance remains to be done. On this point, the minister states that all obstacles are removed, and definitive arrangements made for proceeding with the work. We sincerely hope it may be so. We have constantly pointed out railroads as a resource for laborers and workmen out of employ; and as the sums asked by government have been granted by the Chambers, and raised by different loans, with the exception of the last instalment, which falls due in February 1840, there appears to be no reason why the works on all the lines should not be pursued with the greatest activity. To insure the success of the undertaking, and to increase the amount of the receipts, the lines to the frontiers of France and Belgium should be opened as soon as possible. Of the distance completed (309,291 metres), three fourths are upon one line, and only 82,000 metres are open on the two lines from Brussels to Antwerp, and from Malines to Ghent and Louvain.

NUMBER OF VEHICLES EMPLOYED.

On the 1st of November, 1839, the number of the different vehicles was as follows:—

Locomotives	82
Tenders.....	71
Berlines.....	9
Diligences.....	86
Chars-à-bancs	140
Covered Wagons	65
Open Wagons	92
Wagons for the conveyance of goods	400
Wagons employed on the works	63

None of these vehicles are sufficiently numerous for the traffic; and since 1837, the board of management has entered into several contracts for the purpose of making a considerable addition to them.

All the contracts for carriages and wagons have been taken by our own builders at the following average prices:—

3,170 francs per Diligence.	
2,720 .. Char-à-bancs	
2,428 .. Wagon.	
3,070 .. Baggage Wagon.	

(To be Continued.)

GERMANY.

SCIENTIFIC MEETING AT PYRMONT IN WEST-PHALIA.

I was surprised, at first, to find at Pyrmont so few savans, with whose names I was acquainted; I soon, however, discovered that many distinguished characters were there; but the fact is, the Germans are so modest, and so little prone to boast of their talent, that the fame of many of their first men of science has never reached Belgium.

Out of 194 learned men assembled in this small city, amongst those whose names I never heard before, were the eminent chemists, Wöhler, Rose, Brandes, Himly, and Dumenil; the astronomer, Mädler; Professor Lichtenstein, and Count Munster of Berlin; M. de Buch, the intimate friend and geological rival of Humboldt; Doctor Zeune, the director of the Institution for the Blind at Berlin; Professor Jacobi, of Königsberg; and M. de Stouye, a celebrated savant, and Russian Ambassador at Hamburg. But the man who seemed to possess the friendship and esteem of every body,

and who was the life of the meeting, was Counsellor Nöggerath, professor in the University of Bonn, who is justly reputed to be the first mineralogist of Germany. Nothing was more pleasing than the ease, frankness, and modesty of manners in these men, which qualities were altogether unalloyed by any mixture of self-love or pedantry.

The first day, after dinner, we went, to the number of 60, to visit the Valley of Friedenstahl (Vale of Peace), so called from the quiet demeanor of a colony of Quakers who dwell there. This valley is remarkable for its picturesque situation, being embosomed in mountains clothed with wood, and for a large manufactory of cutlery, the owners and workmen of which belong to the Society of Friends. They import steel, iron, ebony, and ivory, in their raw state, and manufacture them into knives of every description, poniards, &c. They are famous for making the steel forks which are met with in every inn of Germany. On the 19th of September the serious business of the meeting commenced. But as a detail of the treasures of science in every branch, which were then unfolded, would fill a volume, I shall confine myself to the mention of a very curious anatomical exhibition which excited general interest.

All the world has heard of the anatomical figures of M. Auzoux, which supply fictitious subjects for the study of normal anatomy, which have all the advantage, and none of the unpleasantness of real subjects. What M. Auzoux did for normal (a healthy) anatomy, M. Thibert, of Paris, has done for pathological (or diseased) anatomy. He has formed models of different parts of the human body of *Carton-pierre*, which is impervious to the air and to damp; they are in bass-reliefs, on a white ground, and arranged and framed so as to be adapted to a library collection; they are painted in oil-colors, to imitate nature, and represent the organ affected with frightful fidelity; so much so that several anatomists were deceived, and took some of these models for portions of real subjects, preserved and hardened by some particular process. Amongst them was the head of an unfortunate ostler, exhibiting the ravages of a disease with which he had been inoculated by a glandered horse; a heart, swollen to an extraordinary size, which had been the cause of death; scrofulous intestines full of morbid discolorations; a stomach showing the effects of mercurial poison, &c.; and all executed with such exactness, and giving so true an idea of a dissecting-room, that many curious people who went to see them were unable afterwards to eat their dinner.

The account given by M. Thibert of the unhappy persons from whose dead bodies he had taken his models, added an interest, though a painful one, to the exhibition. Copies of these models, equally true to nature, can be made in any numbers, so that no museum in Europe need be without a correct anatomical sketch of every remarkable case that occurs in medical practice.

Whilst at Pyrmont, I visited, in company with a surgeon of Heidelberg, the celebrated Dunsthöhle or Grotto of Dunst. This is chiefly remarkable, like the Grotto del Cani near Naples, for a gaseous stream of carbonic acid which covers the whole surface of the ground, but varies considerably in the height to which it rises at different times. A calculation has been carefully made of the quantity of gas emitted from the several grottoes and other places in the territory of Pyrmont, and M. Brandes, an eminent chemist of Salzufeln, assured me that it amounted to about six millions of cubic feet in a year.

The extraordinary beauty and luxuriance of vegetation, in the neighborhood of Pyrmont, is attributed, perhaps justly, to the enormous quantity of gas which is constantly exhaled. For what else can become of it? With respect to the cause of these gaseous streams, it is said to be the decomposition of large masses of lime, full of carbon, effected by subterranean heat; and this hypothesis may be admitted till a better can be discovered. Having, in the gratification of an idle curiosity, exposed myself to the action of this gas, I should

certainly have been suffocated, if the person in charge of the grotto had not rescued me. We afterwards visited a fountain, at the back of the grotto, and which probably has some communication with it, for its waters, which are beautifully clear, contain a great quantity of acid gas, and are consequently very agreeable to the taste. At this fountain there are always numbers of children; and the moment a stranger is perceived, ten goblets are plunged at once into the water, and he is surrounded by a troop of fair-haired-urchins, all eagerly courting his favor, with the offer of a crystal draught. We got rid of these Naiads of Pyrmont by the aid of a few *gute groschen*, and rejoined our scientific friends, delighted with our day's excursion.

LOUYET.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

LEAMINGTON RAILWAY.—It appears rather surprising that, amidst the numerous instances of public spirit which characterize the exertions of our townsmen for the welfare of this favored spa, no general meeting, or other public method, has been resorted to for the purpose of obtaining some decisive demonstration of feeling among the inhabitants as to the establishment of a branch railway from the station at Coventry; and yet there is, perhaps, no subject more continually and generally the topic of conversation—no plan, the adoption or rejection of which may eventually more tend to accelerate or impede the prosperity of the town. This is now become in reality a matter of grave consideration for all classes of the inhabitants, particularly as a proper expression of public opinion would undoubtedly have weight with many of the influential landowners around us, who perceive, at length, that their own interests are inseparably connected with the increasing welfare of Leamington.—*Leamington Chronicle.*

NEWCASTLE AND CARLISLE RAILWAY.—INCREASE OF TRAFFIC.—This railway goes on growing and progressing in prosperity. Below, we give the traffic for five corresponding weeks, ending in the months of November, for 1838 and 1839. Nothing can more clearly show the ability of railways to develop the resources of traffic than the experience of this line. Few railways but had apparently better prospects than the Newcastle and Carlisle. Passing over a rugged country, and thinly populated, with no great towns on its course, the general impression was against it. Economy, however, of the right kind, in its construction, moderate fares, and regularity of transit, and a board ever ready to gratify the public in its wants, have secured a traffic already ample and rapidly increasing. In corresponding periods of one short year has the traffic increased from £6,593, to £9,211, or 40 per cent. Should it progress at an equal rate for another year, the revenue of this company will be £130,000 a year, which, allowing £50 per cent. for expenses, will divide 10 per cent. on the cost of construction. A similar increase for a second year would divide 14 per cent., and for a third upwards of 19%.

Weekly Revenue for November 1838 and 1839.

	1838.	1839.
Week ending	£. s. d.	£. s. d.
Nov. 3,	1,365 13 3	Nov. 2, 2,127 14 1
.. 10,	1,302 5 5	.. 9, 1,806 6 2
.. 17,	1,429 12 6	.. 16, 1,847 17 11
.. 24,	1,306 17 4	.. 23, 1,903 1 4
Dec. 1,	1,188 19 9	.. 30, 1,526 0 8
	£6,593 8 3	£9,211 0 2
1839..	£9,211 0 2	
1838..	6,593 8 3	

Increase, } £2,617 11 11—*Carlisle Journal.*
in 1839, }

GLASGOW, PAISLEY, AND GREENOCK RAILWAY.—On Tuesday week, the general half-yearly meeting of the proprietors of this railway was held in the Court Hall, Greenock, R. D. Ker, Esq., in the chair, to receive the report of the directors, and transact other business. The seal of the company having been affixed to the registry of proprietors, Captain Huish proceeded to read the report, in which the directors expressed their gratification that during a season of great commercial distress, their works had never been delayed for a single day, but had at all important points advanced with steadiness, preserving an even rate of progress along the whole line. The committee of the Glasgow and Paisley Joint Line had determined to have one station for both companies, and as the preliminaries for its erection were nearly settled, every exertion would be made to have it ready for the opening of the line, which, from the satisfactory progress made with the works, the directors had every expectation would take place in the beginning of the ensuing summer, thus anticipating by some months the time originally calculated upon. The report of J. E. Errington, Esq., the engineer, gave a very gratifying detail of the state of the different contracts, the general progress made with the works, and the manner in which they had been executed. After noticing the arrangements in contemplation for connecting the railway with the quays at Greenock, which could be accomplished at a comparatively trifling expense, the directors requested the concurrence of the meeting to their proceeding with the new act, embracing the arrangements referred to, which they hoped would be obtained in May or June. The existing traffic between Dumbarton and Glasgow and Greenock had been carefully proved, and, if drawn to the railway would in one year more than equal the whole capital to be expended in constructing a pier and other works necessary for a station opposite Dumbarton, without which the trade of the town would not be gained to the railway. This traffic would form an entirely new feature in the prospects of the company. The directors concluded their report by observing that the traffic was most abundant, and recent experience had confirmed the opinion that the railway had nothing to fear from competition. The result, therefore, appeared certain, and the moderate expense at which the whole would be executed, and the peculiarly favorable circumstances of the line itself, were additional and indisputable testimonies of the security of the investment. By the balance sheet laid before the meeting, it appeared that the receipts up to the 30th November, amounted to £282,094 8s 3d, and the disbursements to £282,663 12s 10d, leaving a balance against the treasurer of £569 4s 7d. The expenditure of the joint committee since the last report, had been £70,673 13s 2d.... The Chairman then congratulated the meeting on the favorable state of the works, and the rapid progress which had been made during the past half year, notwithstanding the unexampled pressure on the money market, and the severity of the weather. Much of the permanent way had been laid, and the line now formed, with very few exceptions, a continuous chain from end to end. He knew, indeed, of no work of similar kind which furnished a more striking instance of what skill, combined with labor and capital, could accomplish in surmounting the most formidable difficulties. He was happy to speak of the unanimity which prevailed not only at their own board, but between the members of it and the Ayrshire board of directors, a feeling which was essential to the welfare and prosperity of both companies. The report having been unanimously adopted, the directors were empowered to proceed with their new bill.... The gentlemen who retired by rotation from the board, were unanimously re-elected, and thanks having been voted to the directors and chairman, the meeting separated.—*Abridged from the Greenock Advertiser.*

MORECOMBE BAY RAILWAY.—We understand the bill will be applied for in April next.—*Lancaster Gazette.*

FRANCE.—M. Nepveu is exciting considerable

attention with his suspension railway,* models of which he has been exhibiting in Paris. Its chief recommendations are its simplicity and cheapness compared with laying down a line; but notwithstanding its ingenuity and the commendation bestowed upon it by the numerous scientific persons who have seen it, we doubt its applicability as a substitute for a terra firma railroad for the conveyance of passengers. It is well adapted, however, for passing through a marsh, a lake, or over a river, and transporting goods, materials, &c. Its cost is estimated at from 25 to 30 francs a metre, or from 100,000 to 120,000 francs a league, according to the difficulties of the execution and the weight it is intended to transport. M. Nepveu has submitted it to the judgment of the railway commission, and to the two committees of the Academy of Sciences and of the Society for the Encouragement of National Industry.

As a necessary companion to the suspension railway, M. Nepveu has contrived a kind of crane for heavy burdens, as blocks of stone, which it wields with the greatest facility. One individual can, in a minute, easily raise a weight of 1,000 kilogrammes a metre high.

Antwerp to Cologne.—The completion of this line will be advanced with great vigor in the spring. Government have taken 4,000 shares in it, and in all likelihood the Belgian Chambers will sanction this measure. The King of the Belgians, when recently passing by Cologne, gave the strongest assurances of the lively interest he takes in the undertaking.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and PATENTEES' RECORDER," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
Bogota	Denmark	Nevia
Bahamas	Dominica	New Brunswick
Barbadoes	France	Newfoundland
Berbice	Gibraltar	Nova Scotia
Bermuda	Greece	Quebec
Brazils	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Heligoland	St. Lucia
Caracas	Honduras	St. Vincent's
Cartagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Columbia	Laguaya	Trinidad
Corfu	Malta	Zante
Cuxhaven		

It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their News-men, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 4, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"J. Watson," Aberdeen.—The Act came into operation on the 1st of January, and we have no doubt the various provisions will be strictly enforced.

"W. Gibson," Nottingham.—We fully intend devoting a certain space in our journal to a consideration of the subjects alluded to.

"E. Jenkins," Leeds.—The contract between the two parties being verbal only, and no witness present, the claim cannot be substantiated.

"T. Baker," Liverpool.—We are much obliged by our correspondent's kind favor. It shall appear next week.

* For a description of this Suspension Railway, illustrated by diagrams, see "INVENTORS' ADVOCATE," No. 11.

"C. Kettlewell," Glasgow.—Our agent in Glasgow is Mr. Mc. Phun, of whom our first volume may be procured, by order, at the published price.

"Captain J. C." Stoke, Devonport.—If our correspondent wishes us to notice the invention he speaks of, he must forward us a plain and accurate description of it. It shall then receive our attention.

INDEX TO VOLUME I.

An INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE," is preparing, and will be ready in a few days. The VOLUME will appear at the same time, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)

less we have fallen short of what we expected to realise,—but we are sure every enlightened reader of our work, when he looks at the multifarious nature of its contents, and considers the wide range it embraces, both *at home and abroad*, will allow we have had an arduous task to accomplish. It is not for us to say how it has been performed. Our labors stand recorded in black and white, and we refer to the first twenty-one numbers, (which, as we announced in our last, form the first volume of our journal,) for evidence to show whether we have conscientiously fulfilled the promises held out in our "Introductory Address."

We have, in a former number, referred to the difficulties we encountered at the outset, in organising channels for the periodical and regular receipt of intelligence from different parts of the world; and we have stated that those difficulties are now surmounted. That we have spared no expense to accomplish that important object, the contents of our work furnish ample evidence.

We gratefully acknowledge the encouragement we have met with; and when, on the present occasion, we not only promise to relax none of the efforts hitherto put forth, but declare our fixed determination to render our journal still more attractive and useful than it has hitherto been,—we feel we may with confidence ask for an increase of patronage.

In the progress of our Editorial labors, we have, from week to week, been irresistibly brought to feel that, to develop the scheme of our work *practically and successfully*, (which it is our determination to do to the fullest extent it will admit of), we are led on from *inventions and discoveries* to their application to trade and manufactures—thereby causing the "INVENTORS' ADVOCATE" to be recognised as a *Journal of Industry*, though not hitherto, sufficiently designated as such by the title. Henceforward, however, considering that the "Record of Patents" (which will continue to be a distinguishing feature of our journal) is fully implied by the term "INVENTORS' ADVOCATE", we shall suppress in our title the words "PATENTEES' RECORDER", and substitute in their stead, the term "JOURNAL OF INDUSTRY" (which we borrow from the French *Journal Industriel*). We think we supply a deficiency in the English language, by the introduction of so expressive a term in the sense in which we use it.

At the close of the year, we announced our



THE INVENTORS' ADVOCATE, AND PATENTEES' RECORDER.

SATURDAY, JANUARY 4, 1840.

It has been the custom, from time immemorial, for every literary journal to address its readers on the commencement of a new year; and this "address," for the most part, has consisted of a eulogy on the Editor's past labors, and large promises *in futuro*.

Now we have no wish to deviate from so good a custom; and shall, therefore, comply with this order of the day. We do so the more readily, as it affords us the best opportunity for making a few remarks on some important changes—we may be allowed to call them *improvements*—to be introduced in the future arrangement and publication of the "INVENTORS' ADVOCATE." OUR address, however, will be somewhat different from that of established usage.

We have no wish whatever to praise ourselves for past exertions. We will even con-

intention of reducing the price of the "INVENTORS' ADVOCATE"—our motive for doing so, requires a few words of explanation.*

We have no hesitation in avowing that this Journal was originally undertaken with a view to profit; and past experience convinces us that we did not "reckon without our host". One thing however we have now discovered, which, at first, we had hardly contemplated, and that is, the price of our paper (*eightpence*) though a matter of little moment with the greater number of our subscribers, has yet been such as to impede its circulation considerably among the *million*, who are of opinion that they have as much right as their richer neighbors to a *cheap* Scientific Weekly Newspaper, devoted, as ours is, to the true interests of the industrious classes. This argument is grounded in justice—communications pouring in upon us from all quarters have convinced us of the fact—and we confess it to be a matter of policy, to provide the very best article at the lowest possible cost*. On this principle, we resolve on hereafter making a considerable reduction in our weekly charge; we shall then expect to realise the truth of Dr. Franklin's favorite adage, that "Light gains, and frequent, make a heavy purse."

We have arrived at the pleasing fact, that a publication similar to the "INVENTORS' ADVOCATE" was a real desideratum; and, to prove how that desideratum has been supplied, we would instance the recorded opinions of our leading scientific men, backed by the universal approbation of the principal journalists of Europe, who, insomuch as we are concerned, have echoed our praises from the purest and most disinterested motives.

The utility of the "INVENTORS' ADVOCATE" having been thus uncontestedly proved, we have now only to announce our readiness to meet the wishes of *all* who are interested in its success,—and when we make known to them our determination, that the work shall appear from to day at the price of FIVE-PENCE, STAMPED, and, if possible, improved in every feature,—we consider ourselves entitled to receive all the encouragement it will be our endeavor to deserve.

It is possible that our new Subscribers—some of them at least—may not be fully aware

* In our last, we signified that the price would be reduced to *sixpence*. We since find, on making close calculations, and depending on a very extended circulation, that we can reduce it one penny lower—*fivepence* (the lowest possible charge to leave only a fraction of profit). The character of the journal will not be in any way affected by this,—an accession of talent having been secured, to render it *more valuable than ever*.

of the nature, scope, and design of this Publication,—we therefore refer them to the detailed *Prospectus* printed on the last page of the present number. They will there find the recorded opinions of the Public Press, whose voice has been unanimous in recommending the introduction of our Paper among all who are devoted to Science and the Arts.

The "INVENTORS' ADVOCATE" will be considerably increased in value in a few days, by the publication of an INDEX to the FIRST VOLUME, which will also appear at the same time.

It is quite unnecessary for us to point out the utility of such a publication in a collected form; a glance at the *Index* will speak for itself.

We have occupied more space in making these remarks, than we well know how to spare; but the occasion warrants the propriety as well as the necessity of our speaking thus fully in elucidation of our future movements.

The motto we started with, and to which we have ever proved faithful, shall still attend us,—"*Fiat Justitia, Ruat Caelum!*"

M. Nothomb, the Minister of Public Works, has published his Report to the Belgian Chambers on the National Railroads. This admirable work is as remarkable for its lucid arrangement and expositions, as for the spirit of candor and patriotism which are visible throughout. It does honor to M. Nothomb, as an author and as a minister, and proves him to be an able statistical writer, as well as an honest public servant. This eminent functionary has displayed his administrative capacity in many ways; but in no part of his public career has he distinguished himself more than in the performance of his laborious duties as the responsible head of the Railway administration of Belgium. The extensive range of this administration is, we believe, little understood in England. None of our Railway Companies offer a parallel to it, whether considered as regards the aggregate extent of the lines, the number of stations, or the movement of passengers and merchandise. The total length of the various lines completed and in progress, is 110 Brabant leagues, or 330 miles; of which, 186 are finished and opened. Speaking from our own knowledge (having traversed the Belgian Railway line in all directions), we can state

that every branch of the service, as regards the public convenience, is admirably performed. The civility and alacrity of the em-

ployés are the best evidence of the active surveillance that directs them. We are therefore by no means surprised at the tone of self-national gratulation in which the Belgian journal, from which we have copied the article headed "M. Nothomb's Report on Railroads in Belgium," comments upon this able production of the Minister of Public Works. Before concluding our remarks, we must accord a due share of praise to M. Masui, the director of the National Railroad, who, receiving his instructions from M. Nothomb, vies with that gentleman in zeal and activity to advance the public service. We know they have had an Herculean task to perform. Corruption, the bane of every undertaking managed by governments, had crept into every branch of the service. They have done much to sweep out the Augean stable, but many abuses still remain, particularly in that *cancer* of the railway system, the wear and tear of "*materiel*," and the consumption of fuel. This latter item forms a frightful amount of the expenditure—quite out of proportion with the wants of the service. On some future occasion, we shall return to this subject, which, as a point of comparison with British railway management, cannot fail to interest our readers.

NEW INVENTIONS.

APPARATUS FOR RENDERING SHIPS, ETC.

IMPERVIOUS TO WATER.

M. Marchal, an engineer and machinist of Brussels, took out a patent, not long since, for an invention which not only renders vessels impervious to water, but greatly diminishes the effect of the shock, should they strike upon hidden rocks and sand banks. The merits of this invention were put to the test in the great Basin at Brussels, in the presence of numbers of scientific men, and crowds of people who were attracted by curiosity. A long-boat of wicker work, protected by M. Marchal's apparatus, glided over the water, with six persons in it, more easily than boats of the ordinary kind. The inventor has numerous patterns of every size and thickness, equally flexible and solid; and now having ascertained that his invention is capable of being applied usefully to many other objects, beside vessels, he has just taken out a patent of improvement.

The apparatus of M. Marchal is made of a species of Asphaltum, equally elastic and hard, and which costs much less than that of

Lobsann or Seyssel: and it is capable of being moulded into any shape, or thickness, without losing much of its strength, which is such that a plate of the hundredth part of a metre thick, (about the third of an inch) would not be pierced by the ball of a pistol fired close to it!

As it can be obtained of any size, according to the object for which it is to be used, it must be much more advantageous for the sheathing of vessels than copper, which is so much dearer. The sheathing would be all in one piece, impervious to water, as has been proved; incorrodible, impenetrable to worms, and it would afford considerable protection against the collisions with hard bodies, which often occur in the course of a long voyage. But if this invention supplies a valuable mode of sheathing ships, it promises to be equally useful for the roofs of buildings outside, and as a substitute for plaster inside, where it is a great object to have the walls perfectly dry, as it is not affected either by the rain, or the atmosphere. It may also be made available to cover carriages and wagons. It may be employed with advantage for lining the shafts in colgeries, as an auxiliary to iron in metallurgic architecture, for gutters, water-pipes, reservoirs, pumps, fire-buckets, &c. In fact, it may be safely affirmed that few inventions are capable of being applied to so many useful purposes as that of M. Marchal. He proposes without loss of time to make models of all the different objects for which the composition that he has invented is more particularly adapted.

FORMIDABLE MILITARY WEAPON.

Captain Audibert-Leduc, who is going out with a detachment to Africa, takes with him the model of a weapon which he has invented, and which he calls the *Duc-dards*. It is an *arme blanche*, the effect of which will be equally rapid and formidable: it is intended to repel the attacks of the Arabs, who, confiding in their numbers, may venture to assail the French Camps. The *Duc-dards* is moved by a lever applied horizontally, and is provided with a sort of mechanism by which it is darted forwards, and drawn backwards again with incessant rapidity (*d'une brûle de chasse, et d'une pédale à poulières rappel*) so that a man of little strength is enabled to deal successive blows with the swiftness of an arrow, and the force of a club against his assailants, whom he can mow down and cut to pieces in every direction within a radius of five or six metres.

[We confess that, not being military men,

we do not exactly comprehend the theory of this weapon, but it is clear that in practice it will enable the gallant inventor to achieve more than ever was done by the renowned Baron Munchausen.]

SAFETY BUOYS.

A lieutenant in the French navy, M. Billette, has just conferred a signal benefit on the naval world, by the invention of a new safety buoy, for which he claims neither patent nor advantage.

The method of using this buoy is extremely simple: it is only necessary to cut or to loosen the fastening by which it is held, and as it falls into the water, its own weight puts into action the apparatus for giving a light. This apparatus consists of a copper cylinder, containing a fusee, which burns for 40 minutes, and thus affords ample time, under any circumstances at sea, to render assistance to any one who may fall overboard. It is vastly superior to the English buoys hitherto employed; in the first place because the firework attached to the latter burns only 14 or 15 minutes, which is sometimes too short a period for succuring effectually a man in the water; besides which, the leaden tube containing the firework melts as fast as the firework burns, and the molten drops may fall upon the unhappy victim overboard, who thus incurs a new danger; and lastly, as the firework is lighted by means of flint and steel, which often miss fire, it frequently fails of its effect altogether. The new French safety buoy costs only from 2 frs 50 c to 3 fr, whereas the English buoys cost 180 frs each, a price out of the reach of most merchant vessels.

WATERPROOFING.

The process of waterproofing has been attempted of late years by a number of individuals, each of whom has put forth his claim for the best article, but of those which we have examined none appear to us so perfect as those of Mr. Varicas, whose attention has been devoted to the subject for many years past, and who has produced an article perfectly impervious to wet, and at the same time sufficiently porous, if we may so speak, to admit of the escape of perspiration.

The ventilating waterproof of Mr. Varicas has been subjected to the most severe tests. It has been found to resist the entrance of cold water for many weeks at a time, the under surface not having been even moistened in the slightest degree. Hot water, too, has been applied to it, and even boiled in a piece of the cloth: the result was equally satisfactory, for though the steam poured from the under surface in abundance, not one drop of water was found to penetrate.

This last experiment is decisive as to its waterproof yet porous qualities. We have also seen crêpe, cambric, muslins, &c. under a pressure of water without passing through. These experiments are sufficient to prove that cloth and all articles used for clothing can be made waterproof in the most perfect manner, and quite free from the injurious properties peculiar to India-rubber; the latter impeding the passage of perspiration, and sending forth a peculiarly disagreeable smell.

Mr. Varicas has found so great a demand for these articles, that he has erected an extensive factory in Holborn, where the machinery may be seen daily in full operation.

THE PERRYAN FILTER INKSTAND.

One of the latest mechanical novelties, which we briefly noticed in No. 16 of the "Inventors' Advocate," has been the invention of an inkstand, very ingeniously constructed by Messrs Perry & Co. the celebrated patentees, to keep the surface of the fluid at a uniform level, where it is presented to the dip of the pen. The certainty and comfort attendant on this provision, trifling as they may at first sight seem, are really worth taking into calculation in the purchase of an inkstand, especially if the purchaser

have to spend two or three hours a day on an average, *tete-à-tete* with it, and if he be under the necessity of appealing to its good offices two or three times a minute. The preservation (or rather restoration) of the level of the ink at the open mouth is effected by the aid of a little air-pump, on the principle applied by Mr. Donovan, of Dublin, to the service of tavern bars, causing the desired ascent of a liquid by propelling air into the cask or vat containing it. This extra quantity of air acts on the surface as an elastic force to drive the liquid out of the reservoir, and up by any pipe prepared for its passage to the bar. In the little apparatus before us, the liquid is similarly raised (by the descent of a screw piston) to the height required by the pen. As we dip, and dip, and write away, the surface falls (very naturally), but it is raised again to the level of our wants or inclinations by a touch of the screw. There is, moreover, a filter attached to the inkstand, by which the ink is kept constantly clear and in a fit state for writing. To this the patentees attach considerable value, and we must acknowledge that it is an important feature where persons are in the habit of writing constantly, and dipping their pen frequently into the inkstand. To write with thick ink is a misery we have known, but which we trust henceforward to "remember no more."

THE UNIFORM PENNY POSTAGE

Is now officially announced to commence on Friday the 10th instant, the Lords of the Treasury having published a Minute to that effect, authorising and directing the Postmaster General to adopt such arrangements in his department as may be found necessary, in order to carry Mr. Rowland Hill's plan into full and immediate operation. By this Minute it will be seen that the prepayment of all letters is to be insisted upon, and the much debated plan of stamped envelopes adopted under certain modifications. Her Majesty having placed her own post-office privilege at the disposal of the Lords of the Treasury, the latter have directed that the privileges of parliamentary and official franking shall also altogether cease. The increase in the correspondence expected to result from this measure being likely to embarrass the post-office functionaries, and retard the despatch and delivery of letters, unless some counteracting principle be brought into action, authority is given to the Post Office to close its letter-boxes throughout London and the country from one to two hours earlier than at present, in order to effect the sorting and distribution of the letters in time for the departure of the mails, but allowing still the opportunity, on payment of an extra penny as at present, of posting until the hour of making up the bags. As this Penny Postage Plan is one of the most important measures of modern times, and one in which all persons are more or less interested, we reprint the Treasury Minute verbatim:—

COPY OF A TREASURY MINUTE, DATED DEC. 26, 1839.

My Lords read the minute of the 23d of August, proposing to receive communications from the public with reference to the letter-stamps named in the Act 2 and 3 Victoria, cap. 52, and offering certain rewards for the same.

The communications (more than 2,600 in number) received in consequence of this minute, have for a long time occupied the attention of their lordships. Many of them display much ingenuity. They are highly satisfactory, as evincing the interest taken by men of science and by the public in general in the measures now in progress for the reduction of postage, and they have afforded much useful information with reference to the details of the new arrangement. Upon full deliberation, however, their lordships do not think it will be advisable to adopt any one of the specific plans proposed, without modification and combination with other arrangements.

After the best consideration my lords can give

the subject, and with the view of awarding most fairly between the parties, my lords have decided not to give the specific sums mentioned in their minute of the 23d of August, but have selected four communications which are the most distinguished either for originality or for completeness, and from which my lords have derived the greatest service, and decided to award the sum of 100l. to each. The authors of these four communications are as follow, the names being arranged alphabetically, viz.:—Messrs. Bogardus and Coffin (who have acted together), Mr. Benjamin Cheverton, Mr. Henry Cole, and Mr. Charles Whiting.

My lords next proceed to take into consideration the several points enumerated in the minute of the 23d of August, and the suggestions connected therewith which occur in the communications already referred to.

Their lordships, upon full consideration, have decided to require that, as far as practicable, the postage of letters shall be prepaid, and to effect such prepayment by means of stamps. Their lordships are of opinion that the convenience of the public will be consulted, more especially at first, by issuing stamps of various kinds, in order that every one may select that description of stamp which is most suitable to his own peculiar circumstances; and, with a view of affording an ample choice, their lordships are pleased to direct that the following stamps be prepared:—

1. Stamped covers.—The stamp being struck on pieces of paper of the size of half a sheet of 4to. letter paper.

2. Stamped envelopes.—The stamp being struck on pieces of paper of a lozenge form, of which the stationers and others may manufacture envelopes.

3. Adhesive stamps, or stamps on small pieces of paper with a glutinous wash at the back, which may be attached to letters either before or after they are written; and,

4. Stamps to be struck on paper of any description, which the public may send to the Stamp-office for that purpose.

The paper for the first, second, and third kinds of stamps to be peculiar in its water-mark, or some other feature, but to be supplied to Government by competition.

My lords direct that the commissioners of stamps and taxes, and the commissioners of excise, should receive the official directions to take the necessary steps in conjunction with this board, and with the Postmaster-General, for the preparation of the stamps herein enumerated.

Although the necessary experiments and investigations which have been conducted under the direction of this board are already far advanced, my lords fear that a considerable time will be required for completing the preparation of the dies, plates, and machinery (much of which is unavoidably of a novel construction), necessary for the manufacture of the stamps; and being desirous of affording to the public, with the least possible delay, the full advantage of the intended reduction in postage, their lordships propose at once to effect such reduction.

On the use of stamps, however, my lords have fully decided; they will be prepared with the least possible delay, and when ready, due notice will be given of their introduction.

Having, therefore, communicated with the authorities of the Post-office, my lords are pleased to direct that on the 10th day of January next the following arrangements shall come into operation:—

The scale of weight already established for general post letters to be extended to the London district and other local post letters.

The charge on all letters passing between one part of the United Kingdom and another, whether by the general post or the London district, or other local post, to be 1d. per single rate.

Such postage to be prepaid—if not prepaid, to be charged double on delivery.

Letters between the United Kingdom and the colonies to be charged, if conveyed by packet, and not passing through France, at the rate of 1s. per

single rate; and, if conveyed by private ship, at the rate of 8d. per single rate; in whatever part of the United Kingdom they may be posted or delivered.

Letters between the United Kingdom and foreign countries (those passing to or from or through France excepted) to be charged as follows:—

If conveyed by packet, and posted at the port of departure, or delivered at the port of arrival within the United Kingdom, the present packet rates. If posted or delivered in any other part of the United Kingdom, 2d. per single rate, in addition to the present packet rates, unless where a lower charge shall now exist, in which case such lower charge to continue.

If conveyed by private ship, 8d. per single rate, in whatever part of the United Kingdom they may be posted or delivered.

With regard to foreign letters to and from France, or passing through France, my lords consider that, pending such modifications as may be introduced into the treaty with that country, the maximum of the charge for packet and inland postage should not exceed that rate which is now chargeable on a letter to and from London; no alteration being made in cases where the charge under the present treaty shall be less than such before-mentioned rate.

The preceding reductions do not apply to letters passing *via* France between the United Kingdom and the Mediterranean, Egypt, and the East Indies, which will continue to be charged as at present.

Letters between the United Kingdom and foreign countries will continue to be subject to the same regulations with regard to prepayment as at present.

Lord Melbourne states to the board Her Majesty's desire that such measures may be taken with reference to Her Majesty's privilege of franking as my lords may consider advisable for the public service, and in conformity with the other regulations which they may lay down with regard to franks.

My lords are pleased to direct that, from and after the 10th of January next, the privilege of franking, both parliamentary and official, shall cease.

The printed votes and proceedings of the Imperial Parliament, or of the colonial legislatures of either of Her Majesty's colonies, if sent in the manner now required by law, to be charged as follows, whether passing from one part of the United Kingdom to another, or between the United Kingdom and the colonies, provided they do not pass through France, or to the East Indies, *via* Falmouth:—

Not exceeding 2 oz. in weight, 1d.

Exceeding 2 oz., and not exceeding 4 oz., 2d. And so on, an additional penny for every additional two ounces, without limitation as to weight; such charge to be the same whether prepaid or not.

Their lordships, however, consider it will be proper that the Postmaster-General should be authorised, in cases where it may appear necessary so to act, to postpone the despatch of parliamentary proceedings for twenty-four hours, their lordships being aware that the greatest inconvenience frequently has arisen from the very large influx of heavy parliamentary papers; and their lordships are therefore pleased to call the Postmaster-General's attention to this point with a view to his making such regulations as may be required.

The privileges now attached to addresses to Her Majesty, to parliamentary petitions, to newspapers, and to the letters of soldiers and sailors engaged in service abroad, to remain unaltered, except that a soldier's or a sailor's single letter will be interpreted to mean a letter not exceeding half an ounce in weight.

If any privileged letter or other article become liable to the full letter rates of postage, such rates to be charged according to the scale of rates herein established for letters. The treble duty to which newspapers in certain cases become liable to be calculated according to the same scale.

All privileges, except those already enumerated to cease.

The following are exceptions to the regulation

which restricts the amount of weight to sixteen ounces.

1. Parliamentary proceedings as already named.
2. Addresses to Her Majesty and parliamentary petitions.

3. Letters and packets received from or addressed to places beyond the limits of the United Kingdom.

4. Letters and packets addressed to or despatched by the Government departments, or such officer as may now have the privilege of franking by virtue of his office; and

5. Deeds, if transmitted under such regulations as the Postmaster-General may consider necessary to prevent abuse of the privilege.

In consideration of the reduction now made in the postage of ship letters, and the probable increase of such letters, the master's gratuities will be reduced to 2s. per 100 for all letters, newspapers, and other packets conveyed between one part of the United Kingdom and another. At the same time, gratuities of 1d. per letter or packet, and ½d. per newspaper, will be given to the masters of ships trading to the East Indies, on the same conditions as those now applying to other ship letters and papers.

With reference to the arrangements herein made, the Channel Islands and the Isle of Man are to be considered as parts of the United Kingdom, and the Ionian Isles and Honduras as British colonies.

My lords are of opinion that the whole of these arrangements should apply to all letters and packets posted within the United Kingdom, or (if brought from abroad) first delivered up to any post-office within the United Kingdom on or after the 10th of January next.

My lords will communicate with the public departments with regard to the mode of charging the letters of such departments.

Transmit a copy of this minute officially to the Postmaster-General, and desire his lordship will give the necessary instructions to his officers to carry the directions of my lords into effect.

Desire also that he will direct the solicitor of the Post-office to prepare a draft of a warrant in conformity with the provisions of the postage acts, to be signed by my lords, and inserted in the *Gazette*, pursuant to the provisions of the Act 2d and 3d Vic. cap. 52.

My lords, in carrying the reduced rates of postage into operation, feel it their paramount duty to provide against any disarrangement which a great influx of letters posted at the last moment might occasion in the business of the Post office.

While their lordships are most unwilling that there should be any positive curtailment of the time allowed to the public in posting letters, their lordships feel it necessary, in the first instance at least, to hold out an inducement to the public not to delay the posting of letters to a late period, by restricting the benefit of the full reduction to those letters which shall be posted early; and their lordships with this view are pleased to authorise the Postmaster-General to close the letter-boxes throughout London at 5 o'clock; and in the country an hour and a half earlier than at present, according to the circumstances of each place.

My lords direct that the fees for late letters be charged as follows:—

From the future hour of closing each box until the present hour, 1d. per letter or packet, without regard to its weight; and after the present hour of closing each box, 2d. per letter or packet, except where a larger fee is now established, in which case the present fee will continue.

Instruct the Postmaster-General to make arrangements for carrying to the general revenue the fees for late letters, at the same time submitting for the consideration of this board any cases for compensation which he may consider necessary.

France.—A member of the faculty of sciences at Caen, has proposed that a solution of indigo should be mixed with arsenic to impart a color to it, and thereby to obviate the possibility of its unintentional or clandestine use.

THE INVENTORS' ADVOCATE, AND

BRUSSELS.

ON LIGHTING BRUSSELS WITH GAS.

(To the Editor of the "Inventors' Advocate.")

Sir,—Having noticed, to-day, a paragraph in your Journal of the 14th inst., relative to the contract for lighting the City of Brussels with gas, in which you state Mr. Maugham, of the Adelaide Gallery, to be the successful candidate, allow me to say that you have made a slight mistake. Mr. Maugham is not the contractor, nor did he ever tender for the contract. He certainly introduced the affair to the notice of the English capitalists, who have a large share of the contract, but his name is more immediately connected with the undertaking from his having been invited over by the Council of Regency of Brussels in June last, to exhibit before a scientific commission, appointed for the purpose, an improved method, of his own invention, for completely purifying coal gas, the highly impure state of that furnished to the inhabitants of Brussels having become an intolerable nuisance. On this occasion, Belgian coal, from the various pits of Buisson, Omer, Charleron, &c., was used, some of it quite unfit for producing gas, but from every sort Mr. Maugham succeeded, by his method of purification, in producing a gas of perfect purity, without diminishing the quantity. The Report of the commission to the council certified "that the gas contained neither sulphuretted hydrogen, carbonic acid, nor ammonia, and that it possessed an illuminating power in the proportion of 3 to 1, as compared with the gas furnished by the Old Company."

On this Report the "Cahier des Charges" of the new contract is based, and it is understood to be the determination of the municipal authorities not to accept of any gas which is not equally pure with that of Mr. Maugham's, more especially as it has been proved to them that the improved purification involves no additional expense, but, on the contrary, is cheaper than the present inefficient mode.

The example of the Council of Brussels in thus protecting the health and property of the inhabitants from the highly injurious effects resulting to both from the use of impure gas, cannot be too highly praised, and might be followed with great propriety in this metropolis by the authorities.

Having accompanied Mr. Maugham to Brussels, and, as his pupil, assisted him in making the experiments, I can pledge myself to the accuracy of the facts herein stated. Mr. M. is now in Belgium on business of the same nature, or he would have replied to your notice himself. Requesting your insertion of this,

I am, Sir,
Your obedient servant,

Hoxton, Dec. 27, 1839. J. PRIDDINGTON.
P.S. For your information, the contractors are Messrs. Demot, Legrand, and Co., of Brussels, and Messrs. Barlow and Co., of London—jointly.

PUBLIC EXHIBITIONS.

MADAME TUSSAUD AND SONS' EXHIBITION OF WAX FIGURES.

There is not, perhaps, any place of public amusement in London more acceptable to juvenile visitors than the grand *Exhibition of Wax Figures* at the Bazaar, Baker-street, Portman-square. The number of great personages introduced, and the striking resemblance of each to its original, renders the collection one of considerable interest, and has so strong a hold on the curiosity of strangers, that they not infrequently remain several hours to admire the ingenuity and attraction of the modellings; nor is it at all unusual for the same parties to re-visit the exhibition, with a view to point out its beauties to their friends and acquaintance. Some of the dresses are splendid in the extreme, more especially those introduced in the group representing the Coronation of Queen Victoria, and his late Majesty, George IV. To enumerate all the characters brought under our view in this collection, would occupy considerable space; we need only mention a few of

them:—the Duke of Wellington, Sir Robert Peel, Prince Talleyrand, Napoleon, Luther, and others of the Reformers, the lovely Mary Queen of Scots, Shakespeare, Cromwell, Lord Byron, Madame Malibran, Mrs. Siddons, Liston, Voltaire, Sir Walter Scott, and many hundred other public and well-known characters. The whole are placed in familiar attitudes, and appear to be in direct conversation with each other. The effect is indescribably pleasing, and the impression left on the mind not easily obliterated. The admission is only one shilling!

VARIETIES.

France.—Housekeeping Association.—M. Harel, member of the *Société d'Encouragement*, and well known for a number of ingenious contrivances conducive to domestic economy, has published a book entitled *Ménage Sociitaire*, in which he lays down a plan for forming an association from which people of limited income, and those who are very much engaged, also unmarried persons, may derive much benefit. The notion of combining in order to procure enjoyments, which are inaccessible to a single person at a moderate expense, is not new, for similar attempts have met with success at the Baths of Tivoli for the rich, and at St. Perine for others of a moderate income. M. Harel's plan is to assemble together some two hundred persons of the description alluded to above, and to locate them at the gates of Paris. For the details of the plan, we must refer to the pages of the benevolent and disinterested author.

France.—Conservatory of Arts and Trades.—The Minister of Commerce was present at the opening of the meeting at the Conservatory of the Arts and Trades. After a judicious speech, he was followed by M. Ch. Dupin, who enlarged, with much eloquence, upon the principle which should regulate the amelioration and extension of practical instruction.

Besides the former professorships,—of geometry as applied to the arts and to statistics, of physics and chemistry as applied to the arts, and of reproductive economy, held respectively by MM. Ch. Dupin, Pouillet, Clement Desormes, and Blanqui, senior, another course of chemical lectures has been confided to M. Payen, a chair of descriptive geometry to M. Olivier, of mechanics to M. Morel, of legislation as it affects industry to M. Volovski, and two chairs for agricultural subjects to MM. Mohl and Leclerc Thouin.

France.—The Academy of Inscriptions and Belles Lettres have elected MM. Vitet and Eyrès as free academicians, to fill the vacancies caused by the deaths of MM. Michaud and De Salverte.

FRANCE.—Royal Sugar Company in Greece.—This company has just been formed under the happiest auspices. At a general meeting of the shareholders, MM. Rothschild, Brothers, were unanimously appointed bankers to the company; which appointment is so much the more honorable to them, as in the disposal of the shares, the exercise of patronage and influence is altogether avoided by the directors, who look for the means of success solely to the merits of the undertaking. This example, we hope, will in future be followed by all those who wish to form joint-stock companies. It is the only way to secure public confidence. At the same meeting were elected a committee of inspection, and a committee for superintending the manufacture, who will have a certain degree of control over the directors. The meeting was opened by M. Roberti, one of the directors, with a discourse on the general state of joint-stock companies in France, and on the prospects and vast resources offered by Greece for the advantageous employment of industry.

Berlin.—It has been agreed among the states of the German Union to admit, duty free, all foreign works of art intended for exhibition. Not only is the right of search remitted, but strict injunctions have been given to the custom-house officers to

facilitate by all possible means the transmission of boxes and packets marked on the outside as designed for the above purpose.

The first pianoforte heard in England was manufactured by Zumpo, a German harpsichord maker, who introduced it here about the year 1775. Besides, the natural backwardness of the English in adopting novelties, the instrument had against its favorable reception in this country the quality of its tone, which was of so jangling and jarring a description, as not to offer the least symptom of the possibility of a pianoforte ever being rendered attractive, or even durable, with real judges of euphonious sounds.—*Musical World*.

Mistletoe.—Brand says this sacred plant of the Druids was not admitted with the evergreens into churches, but "had its place assigned it in kitchens, where it was hung up in great state with white berries, and whatever female chanced to stand under it, the young man present either had a right, or claimed one, of saluting her, and of plucking off a berry at each kiss." Mr. Archdeacon Nares adds there was this "charm attached to it, that the maid who was not kissed under it at Christmas, would not be married in that year."

HOW ARE THE MIGHTY FALLEN!

Imperious Caesar, dead, and turn'd to clay,
Might stop a hole to keep the wind away.

Hamlet.

A man some sixty-four years of age, of a tall and commanding figure, and whose fine countenance was remarkable for the chasteness and regularity of the features, was lately brought before the Tribunal of Correctional Police at Paris:—

President.—What is your name?

Prisner.—My name is Peter Simeon Tripet.

President.—You are accused of being a common beggar.

Tripet.—You behold in me an example of the emptiness of glory, and of the instability of all human affairs. I have poised the lance of Achilles, and armed myself with the shield of Alexander. Many a royal diadem has adorned my noble brow; and to-day I am forced to appeal to public charity for morsel of bread!

President.—What's all this? The man is out of his senses.

The King's Advocate.—There is nothing in the charge to prove that he is deficient in reason.

Tripet.—Don't trouble yourselves about that; my head is good enough. You are astonished at what I've been saying, eh? But your astonishment will cease when I inform you that I am a model—a classic model—and, I may boldly say it, the first model of the day.

President.—Oh, very well. But have you no means of livelihood?

Tripet.—None. Proud of my good fortune, I vainly imagined my youth would last for ever. Oh, how beautiful I was! Could you but have seen me at the schools. The artists went to loggerheads for me. Without me, Wien would have been nothing; and David, the illustrious David, owed all his success to my poor body. You may see me in the *Rape of the Sabines*, the second figure to the left, in the foreground.

President.—Once again, do you confess that you have been begging?

Tripet.—Necessity compelled me to do so, when my outward man decayed. I thought it would last for ever; but the back of Achilles is bent, the knees of Philoctetes are become weak, Ajax has a large belly, and Hector is asthmatic. I am fit for nothing now, not even for a Diogenes with the advantage of costume. I shall never stand as a model more, except it is as an old vagabond.

Tripet.—sat down, and a melancholy smile passed over his dignified countenance.

President.—Have you no friends, nor relations?

Tripet.—None in the world. My relations I never knew, and all my artists are dead.

The Tribunal condemned poor Tripet to twenty-four hours' imprisonment, at the expiration of which he will be sent to the Mendicity Establishment.

THE THEATRES.

" See that the players be well used."—*Hamlet*.
" Nothing extenuate, nor set down aught in malice."—*Othello*.

The Christmas Pantomimes, once such objects of delight and fascination, are, we regret to say, now mere spectacles; gaudy as to their exterior, but altogether destitute of fun and ingenuity in their construction. They were wont to set us in a roar of merriment, furnishing, as they did, a rich satirical commentary on the follies of society. The magic wand of *Harlequin* used never to be waived without producing something worth laughing at; *Clown*, too, (GRIMALDI, of course, we mean) was a walking folio of fun; while *Pantaloons*, in every shuffle, conveyed mine of rich comic meaning too plain to be misunderstood. Although it is quite plain they are ignorant of the fact, *Harlequin*, *Clown*, and *Pantaloons* have an important calling; they should be practical caricaturists—droll wizards, grouping the follies of the times in most ridiculous juxtaposition, and, in the very apparent recklessness of their extravagance, turning up laughter-moving realities. The triumvirate are the licensed fools of a holiday-time, and have full liberty to turn satirists; hence, they should "gird at all sorts of men," making their brief hour-and-a-half a succession of biting jests. Folly, in a word, should, for a time, utter laughing truths, and Grimace itself, turn rollicking moralist. Had we the concoction of these matters, we have the vanity to think we could produce something that would provoke laughter at least; and if satire were wanting, that ingredient we would willingly undertake to supply to any extent. It is a powerful weapon, when skilfully handled. But we must proceed to glance at the pantomimes according to our promise of last week; we have seen them all, and are therefore competent to sit in judgment on their attractions.

COVENT GARDEN.—It is quite contrary to our rule, to give the plot, or programme, of a pantomime. It is unfair both to the manager of a theatre, and to his juvenile visitors, half of whose pleasure consists in the anticipation of "what they shall see." We shall therefore merely mention the subject-matter, and glance at the performance.

The title of the "new, grand, historical pantomime," brought forward here, is *Harlequin and the Merrie Devil of Edmonton*, or the *Great Bed of Ware*. As a whole, it is, perhaps, the least interesting of any produced at Covent Garden for many years. The introductory scenes are heavy in the extreme, and only rendered tolerable by the admirable acting of PAYNE as *Master of the Horse*, and C. J. SMITH as *Edwin*. The tricks are nearly all old, and created very little laughter. Two of them, however, did provoke a smile.—A number of policemen rose successively from trap-doors, and put every street-crier into the station-house under the new act, when the prisoners were set free by the conversion of the station-house into a milestone, inscribed—"All right, XVI miles from London." The other cleverly-contrived trick was the changing some hundreds of baskets of eggs, at the *Ecclesiobion*, into as many baskets of babies, all squalling out for their "morning's allowance."

Harlequin and Columbine (C. J. SMITH, and Miss FAIRBROTHER) are deserving of very honorable mention. The former was all life and activity—the latter all grace and prettiness; somewhat too grave, perhaps, but very modest and 'correct.' *Clown* and *Pantaloons* (T. RIDGWAY and MORELLI) are quite strangers to the word *fun*. The former, contrary to all established rule, talked away at a great rate—all about nothing—and the latter received a huge number of awkward thumps with the determined resolution of a predestined martyr.

With GRIMALDI and BARNES, we fear the race of Clowns and Pantaloons was extinct. The gem of the evening was the *Diorama*, by the Messrs. GRIEVE, representing the *Clyde from Glasgow to Eglintoun*. This is alone worthy a visit, and seemed to awaken the audience from their apathy. The only hearty laugh we heard during the evening, was caused by a wayward young sucking pig, who bolted from the stage into a private box, immediately under that occupied by the Countess of Harrington, who, by the way, enjoyed the scene vastly. The expense bestowed on the pantomime has been considerable, but the *materiel* has been wretchedly put together. The subject is one pregnant with humor and effect; and, in skilful hands, would have been a hit.

DRURY LANE.—*Harlequin Jack Sheppard* is the "grand Christmas novelty" at this establishment, and a sense of truth compels us to say that it is but a very indifferent affair. It is tediously protracted till the audience fall asleep, and wish themselves at home. The introduction is meagre in the extreme, and the tricks are of very ancient memory. We saw them nearly all twenty years ago. The only redeeming feature in the piece is the *Diorama*, representing the *Scenery of Circassia, Armenia, Persia, and British India*. Several of the views are exceedingly effective and beautiful, particularly the Encampments, and the pretty Circassian Valley, the Defile of Jagra, and the Salt Desert. The whole diorama reflects great credit on the artists. We may notice, too, in terms of approval, "*Le pas de coco*" (a dance with hollow cocoa-nuts instead of castanets), in which the "Chiarini Family" figured as "pearls from the East," they being properly costumed as "niggers." The family fall in *diminuendo* from man-size to infant, and they make the cocoa-nuts sound according to the stature of the dancer, so that the effect was in its droll way perfect, and the "*pas*" was loudly encored.

Miss FLOOD, the *Columbine*, is a nice girl, and a pretty dancer. *Harlequin*, *Clown*, and *Pantaloons* are pretty well, "as times go," and that is all we may venture to say in their praise.

HAYMARKET.—Poor WEBSTER must, we should think, rejoice at the speedy termination (on the 15th inst.) of his present season. His perseverance in keeping his house open, "under existing circumstances," has astonished every body. He has produced no novelty for Christmas, save—*BULWER'S Sea-Captain!* What an alluring dish for the 26th of December!! The usual "hashes" peculiar to this establishment are being "served up" nightly: the consequence is too obvious.

ADELPHI.—*Harlequin and Mother Red Cap*, or *Merlin and the Fairy Snowdrop*, is, perhaps, the best pantomime produced here for many years. The scenery is good, the tricks are cleverly contrived and executed, and the bustle of the scene is well kept up throughout. There was one scene that excited considerable amusement, in which the shop of the well-known "puffing publisher," Bentley, was placed in juxtaposition with a millwright's. A sedate, thoughtful-looking man, wrapped up in a large cloak, passed slowly towards the bookseller's; but, before he reached the shop, *Pantaloons* succeeded in extracting from under his cloak a large MS. inscribed "Love." Then came strutting forward a bearded exquisite of the first water, from whose pocket was taken a MS. bearing the words "The Sea-Captain." Presently out they came from the shop, not a little annoyed at their loss; whereupon, one after the other, they and their MSS. were shoved, *sans ceremonie*, into a mill, and ground,—one producing a little naked Cupid, with his bow and arrows, the other a captain in the navy in full-dress uniform; both of whom, after one or two evolutions, quietly walked off. Then was brought out from the bookseller's a large parcel, containing "Bentley's Miscellany," which *Clown* and *Pantaloons* immediately seized and threw into the mill. These they kept grinding away, until the result showed itself in the form of *Jack Sheppard*, who no sooner made his appear-

ance than he was pounced upon by a host of bystanders, who literally tore him to pieces, one taking a leg, another an arm, and each glad to get what part he could in the general scuffle. Upon the instant, an announcement appeared in the bookseller's window that *Jack Sheppard* was to be had in parts; and some half-dozen men exhibited placards with the words "*Jack Sheppard* every night."

Another happy hit deserves mention:—A large hamper arrives from the Rhine, and out comes a descendant of the illustrious house of Coburg, about two feet and a half high, whilst from a sieve of Windsor peers an illustrious little lady of similar dimensions makes her appearance. This scene caused young and old to throw off all restraint, and to give vent to their feelings in an immense roar of laughter. In addition to all this there were fairies, coryphées, demons, conjurers, &c., the Eglintoun armor, blue fire, green fire, men, horses, women, and children, mingled in glorious confusion; the whole resulting in one of the most successful pantomimes of the season.

SURREY.—The harlequinade here, rejoicos in the name of the *Queen Bee*; or *Harlequin and Goody Two Shoes*, whose far-famed dealings with the benevolent fairy, Ambrosia (the Queen Bee), thwarted as they were for a time by the wasp sprites of idleness and sloth, are so familiar to our readers that its repetition here would be superfluous. After Little Goody has suffered temporary punishment for parting with her red slippers, contrary to the advice of the good fairy, whose gift they were, she is transformed into *Columbine* (Miss SHARPE), her lover to *Harlequin* (Mr. M. HULINE), and the other characters in the story to *Clown* (Signor BOLENO), *Pantaloons* (Mr. LEHMAN), with the addition of an antic sprite (Mr. ROCHEZ), whose business it is to guard the little red slippers of which *Harlequin* and *Columbine* are sent in pursuit. After the usual number of tricks and changes, buffettings, tumblings, and various displays of strength and activity, the slippers are recovered, and the lovers made happy. In the changes, several well-executed hits are made at many of the passing subjects of the day, in which the New Police Act, the Sunday shuttings-up, and the means used to evade them are not forgotten. The best of these was a clever burlesque on the Eglintoun tournament, which was received with shouts of laughter. The emancipation of the dogs from harness on the 1st of January, and the substitution of men and boys, told very well. Towards the close of the pantomime was presented another and a very splendid edition of P. Phillips's "Dioramic Annual." The scenes selected this year are English, and comprise beautifully executed views in Cornwall, Devonshire, Hampshire, Wiltshire, Oxfordshire, and Berkshire. Amongst these are paintings of Saltash, Tiverton castle, Southampton Water, Netley Abbey by moonlight, Salisbury Cathedral, Salisbury Plain, and Stonehenge (the latter during a terrific storm,) Oxford city, Windsor castle, and St. George's hall, at the moment when the Queen, attended by a numerous suite, is leaving it. These are all admirably executed and do much credit to the artist. It is but justice to add, that the *Columbine*, *Clown*, *Harlequin*, *Pantaloons*, and the antic sprite, did all that grace, activity, strength, and dignity could do for a pantomime, which was as successful as any manager could desire.

VICTORIA.—The renowned *Baron Munchausen* is the subject of the Christmas entertainment at this house, and that chivalric personage is introduced with the usual wizards and genii of the stage. He performs the famous exploit of releasing his horse from his elevation on the church steeple; is shot from the mouth of a cannon to the temple on the green islands, where the *Lady Ethelinda* is confined, in the power of a demon, and takes the extraordinary aim which brings down the flying pig. Being under the protection of the fairy queen, he of course counteracts the evil designs of the *Green Wizard*, and undergoes the transformation into the pantomime hero. The scenery is varied, and well painted,

and some of a most gorgeous description, the dresses most appropriate, and the tricks well-designed and correctly executed. The character of *Baron Munchausen*, afterwards *Harlequin*, is admirably sustained by Mr. FRAMPTON; that of *Columbine* by Mrs. FRAMPTON; and *Clown* by Mr. PAULO. A second *Clown* is introduced, under the name of *Whirligig*, Mr. M'DONALD, a very worthy prototype of his rival. After several views of Blackwall, near the Tower of London, the whole concludes with a splendid scene, "The Palace of Golden Pines and Animated Peacocks." The success of the pantomime was triumphant.

SADLERS' WELLS.—Success, as usual, attends this establishment, and the production of the new pantomime,—*Harlequin and Old Father Aesop*, or *Little Cock Robin and the Children of the Wood*, may be pronounced a happy hit. The nursery story is faithfully, though comically gone through, to the infinite amusement of the juveniles in particular. Among the most impressive incidents of the piece, was the introduction of a huge deal box, labelled "An expensive curiosity just imported from Germany," out of which the "lath" of *Harlequin* conjured a military gentleman, dressed in the style of a distinguished personage, who has recently left this country for the purpose of quickly returning to it. The *Clowns* (for there were two, Mr. MONTGOMERY and Mr. STILT, who performed the *Cock Robin*) belabored the military gentleman *sans* mercy with a huge German sausage which they found upon him. Driven to extremity, he made a desperate dash through the windows of the Queen's Arms tavern; and down over the fracture he had made, there fell an inscription informing the public that the foreign gentleman "had just gone into the Queen's Arms!" The termination of the pantomime was, of course, the happiest imaginable. The piece was announced by Mr. MONTGOMERY for repetition "every night until further notice." The parts of *Columbine* and *Harlequin* were admirably sustained.

Our annual task is now over. The length of our theatrical article, and the season of Christmas, have put criticism on the "regular drama" out of countenance, or we should have occasion to exercise much severity on several enormities practised this week in sundry revivals of old plays. Our duty is an unpleasant one; but having usurped the office of public censor, we shall discharge its duties *sans peur*.

NEW AND EXTENSIVE CONCERT ROOM.—Arrangements have been some time in progress, and are at length completed, for the erection of an elegant and spacious building, especially adapted to promenade concerts, à la *Musard*, on the most magnificent scale. This splendid edifice is to extend from Leicester-square to Castle street. The front will occupy the site of Jaunay's late hotel and the adjoining premises. A more eligible situation for the delightful and fashionable entertainment for which the building is intended, could not have been chosen.—*Post*.

SANDWICH THEATRE.—This little theatre has been greatly enlivened since Christmas, by the accession of the company from Dover. The 'Evening star,' Miss Emma BROOKES, of the Theatre Royal, Covent Garden, has been the great attraction. Judging from the local papers, playgoers are quite enraptured both with her acting and singing. A correspondent writes us, that this young lady "has created quite a sensation among the inhabitants." [This is a doubtful expression by the way, for it has two meanings. Perhaps the lovely syren has made an impression on some of the young gentlemen's too "susceptible feelings." (?)]

MADEMOISELLE TAGLIONI.—The painful reports in circulation of late, respecting the bad state of health of Madlle. Taglioni, have this week been contradicted. Letters from St. Petersburg announce that this celebrated danseuse made her appearance on the 4th of December last, in a ballet in three acts, called *L'Ombre*, of which the first representation was for her own benefit. The success this

piece obtained is due, by all accounts, not only to the admirable talent displayed by Madlle. Taglioni, but also to the magnificence of the scenery and the beauty of the music. There is one scene in the second act which is highly spoken of. It represents a garden of flowers, on which Madlle. Taglioni executes a figure. At the back of the theatre there is a lake, on which Madlle. Taglioni, who performs the character of a shade, dances a few minutes and then vanishes. During the ballet Madlle. Taglioni was encored ten times by the audience; and on the following day, the Emperor sent her a splendid ornament, studded with diamonds and turquoise, as a testimonial of the delight he had experienced.

PARIS.—Eugenia Garcia succeeds well at the *Opera-comique*; her *Era* has made a decided hit. Her musical education is of the first order; even before her appearance as a cantatrice, she was considered an excellent pianist.

Mdle. ELIZA MEERTY, whose singing was so much admired last year at Paris, has been performing at Dresden before the King and the Royal family. The King of Saxony has presented her with a superb dress, as a token of the satisfaction he experienced from her performances.

La Premiere Ride, a new comedy, has had the happiest success at the *Vauderville* theatre. It is by the author of *Pourquoi*, and though it should have been played at *La Comédie Française*, it loses nothing by being brought out at the *Vauderville*. Mme. Thénard, Emile Taigny, and Bardou, are the principal performers.

We are sorry to find that we are soon to be deprived of the talents of our excellent tenor, Albert, who is engaged by the directors of the theatre at Toulouse.

Among the musical novelties at Paris, may be mentioned *Les Romances* by Masini, and *Proch's Melodies*, both of which are already highly popular.

La Renaissance.—A new opera has been produced here, entitled *The Chaste Susanna*, the music by Monfron. The nature of the piece is so revolting to delicacy, and withal so profane in its *morale*, that we cannot accord it one word of praise. The music, indeed, is beautiful, and the spectacle gorgeous; but here our commendation must stop. Madame Anna Thillon, whose popularity here is daily on the increase, sang and acted exquisitely as *Susanna*. There were also three debuts in this opera—M. Laborde, a tenor; M. Euzet, a bass; and Madlle. Ozy—of whom the first is the most remarkable for his fine counter-tenor notes. If M. Monfron's music had not been appended to a profane *libretto*, we might have been tempted to signalise its beauties more particularly. As it is, it will not reach England, unless some ingenious playwright does as was done with the *Moise* of Rossini, and the *Joseph* of Mehul—adapt the music to a non-biblical subject.

BRUSSELS.—M. Hanssens, old leader of the orchestra, has received a theatrical engagement for the new year.

On Christmas day there was a grand orchestra mass at the Cathedral of St. Gudule, and a performance of sacred music again at vespers. There has rarely been such a concourse within the walls of the church; it was literally crammed.

Mademoiselle Nathan, a daughter of Israel, and, as some assert, Braham's niece, has created, within the last few days, a considerable sensation in this city. She was a pupil of the "Conservatory" at Paris, and her musical powers are ably seconded by the high cultivation of her voice. Sweetness of tone, and delicate modulation, are her principal characteristics; and although the extent of her voice seems hardly adapted for a large house, yet its power is far above mediocrity. We sincerely hope that the report of her having entered into an engagement with the directors of the Brussels Opera, may prove to have been well founded. She will worthily replace Mademoiselle Jauwreck, who retires at the end of the present season.

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THE

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A WEEKLY BRITISH AND
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SATURDAY, JANUARY 11, 1840.

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ON THE PATENT LAWS OF ENGLAND.

(Continued from our last.)

SHOULD FOREIGN INVENTIONS BE PROTECTED BY BRITISH PATENTS?

It may be fairly inferred, from the very limited language in the statute of James, that the legislature did not intend to reserve the right to the Crown, of granting letters patent for any new "manufacture" which was not actually *invented* or discovered by a subject *within* this realm; for the 6th section of the act, 21 James I. cap. 3, enacts, "that any declaration therein mentioned (for avoiding monopolies), shall not extend to any letters patent and grants of privilege, for the term of fourteen years, or under, thereafter to be made, of the sole working or making of any manner of new manufactures within this realm, to the true and first inventors of such manufactures, which others at the time of making such letters patent, and grants shall, not use." We rejoice, however, that our courts of judicature have not restricted the enactment to a mere literal interpretation, but have wisely extended a liberal and beneficial explanation of the expressions thus employed. The earliest, and in fact almost the only case in which the question, whether a *British* patent would be valid for a *Foreign* invention, was determined, was that of *Edgeberry v. Stephens*, in the Court of King's Bench, in which Judges Holt and Pollexfen decided that such a patent would be good. If an invention be new in England, a patent may be granted for it, although it may have been practised beyond the sea; for the statute specifies manufactures which are new *within* this realm; and the person who first *introduces* a new invention "within this realm," whether he has acquired the same by travel or study, is construed to be the first and true inventor thereof, and entitled to the patent right thereto. From this decision the most important domestic and national results have accrued, for it must be admitted by every unprejudiced mind, that we have derived as many excellent inventions from foreigners as have originated here. It has been remarked that the prevailing talent of the English and Scotch people is to apply new ideas to use, and bring such applications to perfection, but that they do not imagine so much as foreigners; and to a certain extent, the truth of the observation must be conceded: of late years, however, the products of

inventive genius have been at a higher premium here, and there has consequently been a greater exertion and display of native talent. The policy of permitting patents to be taken out, for inventions communicated from abroad, cannot be denied, for at the manufactures of the country are thus continually improved, and international commerce and advantages very extensively promoted, if patents for foreign inventions were denied here, it is but reasonable to conclude that patents for British inventions would be refused abroad, and thus would the inventor's profits be curtailed, and national jealousies constantly excited. Now almost all nations foster and protect inventive talent, by systems of patent laws, varied indeed in detail, but having one grand object,—the encouragement of arts and manufactures, by securing the due reward of genius. History sanctions our opinion, that the refusal of a British patent for a foreign invention would almost inevitably induce a corresponding determination abroad, on an application for a foreign patent for a British invention; for Rapin, in his "History of England," states "that the English, not being well skilled in the art of dressing and dyeing their own cloths, had been accustomed to send them in a white state to Holland, where they were dyed, dressed, and in part sent back to England for use." The "merchant adventurers" had a royal charter from Queen Elizabeth, for transporting white undressed cloths, notwithstanding the statute 14th and 15th Henry VIII. Alderman Cockaine obtained a patent from James I. for dressing and dyeing such cloths; and the King thereupon revoked the merchant adventurers' charter, in order that all cloths might be dyed and dressed at home; and the Dutch, in return, immediately prohibited the importation of dyed cloth from England, and thereby closed a source of extensive merchandise; the patentee, also, finding that all foreign competition was excluded, vended inferior articles, under the color of his patent, at a most extravagant price, whereby the woollen trade became greatly depressed, and occasioned so much dissatisfaction, that the King was obliged again to permit the exportation of white cloth. Thus the former state of the trade was soon restored.

Charles II. granted a patent for *exporting* white cloth; it expired in 1707: and then by stat. 6th Anne, caps. 8 and 9, the exportation of that article was permitted, under a small duty, to encourage the dressing and dyeing trade. It is sometimes argued, that patents for foreign inventions create an unfair monopoly, and that if no such patents were permitted, the whole trade, and consequently the public, would have the benefit of

many important inventions which are now confined to patentees; but the proposition will not survive examination, for the larger proportion of foreign inventions are in as crude and inoperative a state on their importation, and in as much need of future expensive cultivation, as any of the productions of our own inventors when they first disclose them; and unless the exclusive right were secured to the person who expends his labor and capital in manufacturing a foreign invention, it would remain as useless and unprofitable as it was when imported. Where an invention has been publicly practised abroad, and is consequently imported in a working condition, it very seldom occurs that even then it can be profitably applied here, unless the exclusive right is secured by patent, for there are certain prejudices against the adoption of any novel manufactures, until their utility has been thoroughly established (which cannot be surmounted without expense); and when that object is attained, if the article be not protected by patent, it is open for general competition, and the person who first introduced and encouraged its adoption is generally minus the sums expended for the purpose of its introduction. By granting patents for foreign inventions, the influx of knowledge is powerfully accelerated, the arts and manufactures are cherished, and men of genius are greatly stimulated to exertion by the hope of adequate reward. The patent laws offer peculiar advantages for the introduction and cultivation of new inventions from all parts of the globe; new ideas are seldom if ever complete;—they demand experimental tests to ensure their practical and profitable application;—and it is the certainty that the person, who thus matures foreign inventions, may acquire an extensive property therein by patents, which encourages him to adopt and foster them for general use. A patent is indeed a boon of some magnitude to an inventor, for he may now not only secure the exclusive right to his invention in Great Britain, Scotland, and Ireland, but in Belgium, France, America, Germany, and other nations; yet, though, such vast means of profit have been accessible, the difficulties in their attainment have rendered them almost unavailable. There has hitherto been no recognised public organ between British and Foreign inventors and capitalists, no acknowledged channel of communication between scientific men at home and abroad. "THE INVENTORS' ADVOCATE" has therefore undertaken that responsible and arduous duty, and will impartially and zealously support inventions, trade, manufactures, literature, and the arts, in every department.

(To be Continued)

DUTY OF PLANTING FOREST TREES.

Father Martin, the provincial chief of the Dominicans, a good, amiable, and clever man, (such as they were in former days,) used to relate, that having become acquainted with Rousseau through the introduction of one of the friars, to whom the philosopher of Geneva had taken a fancy, their conversation usually turned upon botany; and that in speaking of the great utility of trees, and of the duty of planting them, Rousseau uttered these words, with the tone and air of the most profound conviction—"France will one day perish for want of wood." Buffon was of the same opinion.

Cooper has described a vast tract of country in America, bearing a name, by the French translated *prairie*, which is remarkable for the most unequivocal signs of fertility, and which is nevertheless a desert. There are here and there traces in it of ancient habitations, and of divisions of land, which indicate that this country was formerly cultivated, and possessed towns and villages; in short, that it was the country of one or more industrious nations, who have disappeared from the face of the earth. If we look for the causes of this catastrophe, they become evident, when it is remarked that a space of a hundred leagues may often be traversed without meeting with a tree.

The civilised people who, in the days of yore, occupied a country more extensive, and perhaps more fertile, than France, and situate beneath as fine a climate, perished for want of wood. They perished because they respected not the primeval forests, which had been the majestic cradle of the human race,—because they refused to understand that man was not sent here below to destroy, but to cultivate, to adorn, to improve, to continue the great design of creation. If any thing in a creature gifted with reason and foresight could excite surprise, it would be the very slight degree of foresight which he displays. Mankind resembles more or less those *Caraibes*, who sold their bed in the morning for a glass of brandy, and wept in the evening because it was no longer in its place.

The foresight of nations, like their strength and their justice, stands in need of centralisation, which is providentially effected by public authority. The surest means of annihilating a civilised people would be to leave them uncontrolled to the impulse of their individual passions. Even the savage hordes of Canada, taught by the imperious voice of nature, have a stronger instinct of public foresight than ourselves. Civilised man is like a great baby, self-willed and troublesome, who, though unable to walk without assistance, angrily bites the leading strings which hold and prevent him from falling. Another subject of surprise is the fact, that the care for the preservation of woods diminishes in proportion as it becomes more necessary. In the primitive ages, when the earth was covered with immense forests, the rulers of the people tormented themselves with the dread of their being destroyed, and adopted the wisest measures for their protection. It was with this view that particular forests were solemnly consecrated to the deities, and thus defonded from violation by religious terror.

OUVIER DE SERRE, who wrote at a period when there was no want of wood in France, still shewed himself possessed with the idea that trees would one day disappear from her territories. To inspire us with the love of planting, is the constant aim of his exhortations. "Be slow," said he, "to build, quick to plant; even before you think of housing your cattle, make haste to propagate your trees."

USE OF STEAM IN THE DRESSING OF CLOTH.

The use of steam in fixing colors, is entirely the result of chance; and its application to the preparation of cloth was the consequence of numerous experiments. The brilliancy which the English manufacturers succeeded in giving to their fabrics

by this process, which was carefully kept secret, was for a long time despised of by the French manufacturers. M. Victor Grandin, who, through unexpected obstacles, succeeded in being admitted to several factories, was the first who imported into France this most useful discovery. For some time he privately used it in giving a surface to his cloths which no one else could rival; and the high profits which his fabrics procured, were an evident proof of the success of his experiments.

At present, the use of steam in these matters is no longer a secret, and almost all the manufacturing towns avail themselves of it; still the towns in the north maintain a superiority over the southern districts; and, it is not unworthy of remark, that a process, however simple in itself, is by no means certain of general adoption.

The different systems employed at Elbeuf, Louviers, Sedan, and Rheims, have so far succeeded in their various adaptations in their different central manufactories, as to secure a rivalry between them of useful importance.

Steam is applied to cloths in two different stages of their manufacture; the first, before the two first waters, and, according to some, before each dressing. This application, which is carried on by means of different machines, and with strong pressure, both for cloths in the roll and flat, has for its object the softening the stuff, and dilating the pores; at the same time, the grease is brought to the surface of the cloth, if any remain, which is carried off by the water.

This system although in continual adoption in the factories of the north, is every year falling into disuse. Some manufacturers pretend that the penetrating fluid, and the heat, ruined the web of the cloth and spoilt the stuff.

The second stage in which it is employed, and with continued success, is called "*appret indestructible*." Its object is to give to the cloth, by means of extraordinary pressure, a polish, a fold, and an exquisite clearness. In this system, as in the other, many kinds of machines are employed: some cylindrical, completing nine rolled pieces enclosed in a steam chamber; the other, oblong, with gratings at bottom, on which the cloth is laid out in folds, and which is covered by a plate preventing the approach of all external air. The operation is performed in about a quarter of an hour, and is twice repeated; the second being but the operation on the reverse of the folds.—*Moniteur Industriel*.

EXPIRED PATENTS.

A LIST OF PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING JANUARY 4, 1840.

ENGLAND.

Not a single patent has expired during the week.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO THE WEEK ENDING JANUARY 4, 1840.

(Continued from our last.)

ENGLAND.

JOHN BRADFORD FURNIVAL, of Street, Ashton, Warwick, Farmer, improvements in apparatus or materials to prevent persons sinking when in the water. Dec. 4.—Many life-preservers, that have been employed to keep persons from sinking when in the water, are obliged to have air forced into the belt or pouch, before they will become buoyant. But by this improvement the waterproof material does not require air to be forced in, as a series of hoops are placed inside, which, when the belt is drawn round the person, distend the material, and sufficient

air passes within, so as to give a buoyancy capable of supporting a body of certain weight.

The peculiar advantage of this invention consists in the convenience of carrying it about the person, as it can be introduced in the collar of a coat, in a hat or lady's bonnet, or in the pocket, or in a woman's bustle.

Should the material that is distended by the hoops not allow the air to enter through any of its seams or crevices, then it would be requisite to blow or force air into the belt, by means of a tube with a screw mouth-piece.

WILLIAM BATES, Leicester, fuller and dresser, improvements in the process of finishing hosiery and other looped fabrics, Dec. 4.—In the first improvement, shapes are introduced into the stockings, or other hosiery, and are kept under a pressure, by which means the appearance of the fabric is greatly improved.

The second feature of the improvement consists in the method of heating the shapes, before they are placed in the stockings or other hosiery, when they are rolled or pressed, according to the texture of the fabric.

In the third method adopted, the shapes are placed in the stockings, &c., and are laid in the press, when layers of brown paper pasteboard should be put over them; then plates of metal, not so much heated as to burn or cockle the hose, must be put next to the pasteboard: the like is repeated with every set of shapes, and the press or roller will greatly improve the appearance of the hosiery.

Lastly, the stockings, or other hosiery, have shapes in them, and are arranged in a chamber, where steam at 5lb. to the square inch is introduced, after which the articles are pressed or rolled, or, on some occasions, they are left to dry when it is not requisite to roll or press them.

CHRISTOPHER NICKELS, Guildford-street, Lambeth, and JOHN DANFORTH GREENWOOD, Belvidere-road, Lambeth, manufacturer, improvements in producing plain and ornamental articles and surfaces from cements or earths, separately, or combined with other materials, Dec. 4.—In making this improved artificial marble or stone, the inventor prefers the use of Greenwood and Keene's patent cement, which is put into a receiver, and if colored marble is required, it is irrigated by different primitive colored matters, prepared in separate barrels, and as soon as the cement and colors are sufficiently blended, the whole is passed between a pair of crushing or grinding rollers; the trough that catches the soft cement, is lined with zinc, finely perforated, over which is placed a linen cloth to prevent the cement from adhering to the zinc; it is now put under a press, and by continual pressure the water passes out of the cement, and leaves it as a solid body, which, in its green state, or before it is hardened, can be carved into any form or shape required.

The inventor is aware that similar means have been adopted in making artificial marble, and forming them into shape by moulds, but in his improvement he forms the cement into blocks of marble under greater pressure, whereby it obtains a closer texture, and the artificial block, when sculptured into form, gives a more natural appearance of grained marble, than if it were pressed into moulds.

The second feature of his improvement consists in the method of forming colored cements in imitation of Berlin or Vienna patterns. The cement is colored, and when taken from the press it is cut into square oblong shapes, when the different colors or patterns are glued or pressed together, so as to form a block of many colors, which may be cut into thin plates, for the purpose of covering floors, &c.

Thirdly, with the different colored cements the inventor forms Arabesque designs.

A series of flat rings, encompassing each other, are placed on a flat surface, the centre is taken out, and a colored cement fills up the space; the second flat ring is taken out, and another colored cement fills up the second space; the third and fourth flat

rings are taken out, and are filled up in the same manner, when the whole adhere together and form a variegated surface.

Different patterns of birds, trees, &c., may be formed, by having a plate of metal cut so that the different parts may be separately taken out, and filled up with the different colored cements; thus forming an ornamental surface in imitation of Arabesque designs.

HENRIK ZANDER, North-street, Sloane street, Middlesex, *improvements in steam-engines, steam-boilers, and condensers*, Dec. 17.—It is well known that a paddle-wheel should not exceed a given velocity, in order to obtain the reaction of the water; thus in large marine engines it has been requisite to diminish the action on the paddle-shaft, by introducing a cog-wheel that is in gear with a smaller wheel of the engine. In large engines, the cogs of these wheels are obliged to be made of sufficient strength, which causes much friction, and greatly tends to reduce the power of the steam-engine.

The inventor does away with this friction by putting, in the place of wide cog-wheels, a series of wheels together, whose diameters are equal, yet the cogs of each wheel do not work parallel, but are a little in advance, or separately situated, so that when the cogs of the driving-wheel take into the cogs of the wheel that is on the paddle-shaft, they will all meet at divided points, without causing so much friction.

In order to keep the action of the driving-wheel above the paddle-shaft wheel, the inventor employs a circular rod, the lower part of which is connected with the piston-rod, and the upper end is connected with the crank shaft of the driving-wheel.

The improved boiler has a smaller boiler in its centre, just above water-mark, so that the steam that is created in the outer is employed to heat the water of the inner boiler, and the superabundant steam passes off into the air through a valve hole, by which means the boiler is not so liable to burst.

Another boiler is cast in a longitudinal form, and small divisions of metal are secured within, so that in appearance the boiler possesses a series of square tubes, which, at sea, is highly important, as the reeling of the vessel cannot leave any part of the under surface of the boiler without water.

The condenser is constructed with a series of thin plates, zig-zag or circular.

There is a safety valve which requires some further explanation to make it better understood.

BENJAM J'ANSON BROMWICH, Clifton-on-Tyne, Worcester, *improvements in machinery to be worked by the application of the expansive force of air or other elastic fluid to obtain power*, Dec. 17.—The first motive power of this machine is obtained by condensing or compressing air in a vessel, and as this air passes at intervals into a heat chamber that is surrounded by a furnace, its expanding power causes the pistons to work up and down the cylinders of the engine. A parallel radiating rod, moving with the main beam, causes the air pump to supply the condensing vessel, while another rod is employed to open and shut the air cocks that convey the air to the heated or expanding chamber, as well as to pass off the air that has worked the piston.

Any of the gases may be employed to work an engine on the principle of this invention, which is to supersede steam-power.

AMBROSE BOWDEN JOHNS, Plymouth, Devon, artist, *improvements in coloring or painting walls and other surfaces, and preparing materials used for that purpose*, Dec. 19.—The inventor employs a compound of ingredients for the purpose of coloring or painting walls, floors, &c., after which a coat of oil paint may be introduced to great advantage. The ingredients are mixed in a receiver or pail that has a sort of paddle-wheel in its centre.

The first portion of ingredients is composed of 28 lbs. of resin, and 2 lbs. of tallow, kept at a temperature of 230°, to which are added 9 gal. 1 qt. of raw linseed oil, and 18 gal. of dry linseed oil.

The second portion of ingredients is composed

of 12 gals. of bran thrown into 37 gals. of soft water; the bran is strained off, and the liquor is used to dissolve 14 lbs. of starch, and is kept at boiling point; 150 lbs. of whitening, and 75 lbs. of pipe-clay, or other argillaceous earth, are now introduced, and when dissolved, both portions are blended and well mixed until it has the appearance of cream, and is united in one homogeneous mass; as soon as the ingredients are cool, 460 lbs. of white sand are added (that which is found in the vicinity of Rouen is preferred); pigments of any color may be mixed with the ingredients, and if used with oil, it may be ground by any of the means had recourse to in the process of levigating or communting paints.

HENRY WILKINSON, of Pall Mall, gun-maker, *improvements in fire-arms*, Dec. 21st.—This invention consists in a simplification of the percussion lock, which may either be used with the ordinary percussion cap, or with a new primer, which forms part of the invention; there is also a magazine to hold a number of the new primers. The parts of the lock are all on the underside of the gun-stock. The nipple is screwed into the barrel of the gun, in the lower side, and near the plug or breeching, and protrudes through the stock. A strong spring of, we should imagine by the appearance of the drawing, six inches long, is firmly screwed by one end to the under part of the stock, the end by which it is not screwed being shaped so as to form the cock, and of course falling accurately on the nipple. A kind of ring shape is given to the end of this spring and cock, for the purpose of laying hold thereof to set the cock. The trigger, sear, and tumbler, are also in one piece. The trigger and tumbler are in fact a kind of crank-lever, one arm of which holds the main-spring cock from the gun, and the other arm serves as the trigger to release the main-spring cock, which falls upon the nipple, and explodes the percussion cap. The tumbler arm has two notches, one for half, the other for full-cock.

The various parts of the lock are attached to a plate by which they are fixed to the gun. The trigger is provided with a guard as usual, considering the alterations in position, &c., of the lock. In the lock we have now described, the spring cock is placed before the nipple; another modification is described, in which the spring cock is behind the nipple, for the purpose of allowing room for the priming magazine, which forms another part of the invention.

The new method of priming consists in a small ring of cardboard in the opening, in the middle of which the detonating composition is placed, and a piece of paper gummed on each side. For the purpose of using this priming, the lock must be modified as follows:—

The nipple is made of a form to embrace the primer on its being worked on one side, and the end of the stock, instead of being concave, is pointed, so that it shall pierce the centre of the new priming.

A magazine of these primers is placed in a groove in the under side of the stock, one end of the groove coming up to the nipple. It consists of a long flat square tube of metal, with a slot along one side thereof. A number of the new primers are placed in a row in the tube, and behind them a piece of metal, with a button protruding through a slot. When the magazine is filled with the primers, it is placed in its groove and fastened by a catch. Then, by pushing along the button at one end of the magazine, the primer at the other end is driven out into the nipple to be exploded; when that one has been used, another can be pushed forward, and so on until the magazine is exhausted, which is then to be taken from its groove, and replenished.

The patentee states the advantages of his lock to be the simplification of the whole arrangement of lock, which in his plan consists of three or four instead of 25 or 30 pieces, as in the common lock. The stock is stronger, in consequence of not being cut away to admit of the mechanism. It also combines cheapness and facility of operation.

JOSEPH PONS, Union Crescent, Kent-road, *improved process of hardening wood and iron, and rendering wood repulsive of vermin, and proof against dryrot*, Dec. 21st.—This invention consists in the impregnating wood with a solution of sulphate of iron, or a solution of iron mixed with other materials, and in hardening iron by plunging it at a red heat into a similar solution.

A quantity of iron filings or turnings is dissolved in nitric acid, and then alum, saltpetre, and prussic acid, in certain quantities, are added, having each been previously separately dissolved in warm water. Water is added to the solution until it will indicate 50 of Beaumer scale. The wood is to be steeped in tanks of this chemical solution. Four days are sufficient to saturate a log of from four to six inches section.

Cast-iron is hardened by heating it to a blood or cherry-red, and plunging it in the above described solution.

Wrought-iron is to be hardened by covering it with a paste composed of the above-mentioned materials, thickened with a quantity of size, the iron being cold. It is afterwards to be placed in a furnace, and heated to a blood red, thrown into the paste composition for a few minutes, and lastly plunged into the firstly-described chemical solution.

RICHARD BEARD, Egremont-place, New-road, *improvements in printing calicoes and other fabrics*, Dec. 17.—The principal feature of these improvements is the method of constructing a transmitting roller, whereby the colors are transposed to the printing cylinder, without the necessity of putting in fresh cylinder for each color that is printed on the calico or other fabric.

The transmitting roller has a series of moveable slides round its surface, and these slides receive the color from the different coloring troughs, where scrapers or doctors are placed to return the surplus matter again to the coloring troughs. The moveable slides having received the different colors, the transmitting roller is then moved round to supply the several figures on the printing cylinder, which being done, the slides, with their colors, may be transposed on the surface of the roller for supplying other parts of the pattern designed on the printing cylinder, by which means two or more colors may be transferred without the necessity of changing rollers or cylinders.

Another feature of the improvement shows the method adopted for relief-printing. A metal cylinder is employed, in place of a wooden roller, and on its surface are secured, by soldering, the different patterns or designs, which are afterwards smoothed off, should any of the parts be found irregular. The other method of forming a roller for relief-printing, is to encompass the cylinder with asphaltum or other bituminous matter; and when a smooth surface is obtained, the different metallic figures are placed upon it, so as to form the pattern or design required.

ALEXANDER FRANCIS CAMPBELL, Great Plumstead, Norfolk, and CHARLES WHITE, mechanic, Norfolk, *improvements in ploughs, harrows, scurfiers, cultivators, and horse-hoes*, Dec. 17.—With this improvement, the labor of holding the plough in an upright position is greatly diminished. An upright rod is attached to the main beam of the plough by means of a swivel joint; and a rod passing diagonally from the axle near the wheels to the upright rod, causes it to yield to any inclination that the wheels may take, either one side or the other, without carrying the ploughshare with it, whereby the plough always maintains an upright position.

Another improvement in the plough is the use of tension knives, or coulters, which is a thin bar of steel, secured at top by a screw-nut on the cast-iron frame of the plough.

The third improvement consists in the method of employing two or more tension knives, or coulters, on one angular beam, thus causing several furrows to be formed by means of one plough, drawn by horse or steam power; in turning, the knives, or coulters, are raised from the ground, so that the wheels may act freely, and without injuring the

plough; at the sledge end, a hollow conical wheel is placed to rest against one side of the furrow. Another method is adopted, by having a cylindrical wheel to run in the furrow, with a shield on each side, to keep the dirt from clogging it.

Another improvement is to attach a set of horse-hoes to the axles, which in revolving will cut up the weeds on either side of the turnips, &c.

The subsoil plough has a spade or skife that is raised or lowered by a moveable pin; the upper end of the skife has a chain linked to the handle of the plough, in order to keep it at any inclination required; the point of the spade or skife is made of steel, tempered in diluted prussiate of potash.

The subfur plough has a flat blade that passes under the turf without turning it over.

The drain plough has a tension knife on each side of a centre blade, for the purpose of cutting the drill before the earth is turned up.

MATTHEW PUNSHON, Norfolk-street, Blackwall, engineer, *an improved steam-engine; certain parts of which improved steam-engine are applicable to steam-engines on the ordinary construction*, Dec. 20th.—This improved steam-engine is principally intended for steam navigation, and the drawings annexed to the specification consist of various views of a marine engine, very elaborately detailed. The invention consists in the applying a new parallel motion to the cylinder of an oscillating engine, which parallel motion partakes of the oscillating motion of the cylinder, and preserves the parallelism of the motion of the piston-rod in whatever position the cylinder may be, thus obviating the principal objection to oscillating or vibrating engines,—the one-sided friction or strain of the piston-rod on the stuffing-box, and the piston on the interior of the cylinder.

This parallel motion has very much the appearance of one division of a "lazy tong." The top of the cylinder is squared, and on each side of the square are placed a pair of bell-crank levers, or levers forming the two sides of a triangle, which the patentee calls "radius levers." Their centres work upon pivots on the cylinder top. The lower arms are joined by two equal-lengthed rods, one end of each of which is jointed to a lower arm of a radius lever, and the others are jointed to one another. The upper arms of the radius levers are connected to the head of the piston-rod by parallel and equal-lengthed connecting rods. Thus the arms of the radius levers on one side of the cylinder, cannot either approach to or recede from a line coinciding with the axis of the cylinder, without causing the pair on the opposite side to approach or recede in the same proportion. When the piston is at the bottom of the cylinder, the top arms of the radius levers are at their points nearest the cylinder; as the piston rises, these arms recede from one another; at the middle of the stroke they are at their greatest distance from one another, and the parallel and equal-lengthed rods connecting these arms with the piston-rod head, are on a parallel line. As the piston further rises, the top arms of the radius levers approach each other, until at the top of the stroke, when they are again at their nearest point of approximation. Of course when the top arms of the radius levers are widest extended, the lower arms are nearest to each other. Thus the parallel motion of the piston-rod with the axis of the cylinder is preserved, notwithstanding its vibratory or oscillating motion. The same parallel motion may of course be used in stationary cylinders.

Another novel feature in this engine is the working of the pumps by an action derived from the oscillating motion of the cylinder, by means of a lever and connecting rods, the lever vibrating with the cylinder, and working the pumps by the connecting rods.

There is, lastly, a new expansion slide valve gear. The difficulty Mr. Punshon proposes to overcome in other expansive gear, when the engine is reversed, the eccentric is in the opposite direction, and therefore does not act. The patentee raises and depresses the bearings of the usual Y shaft, and, consequently, the slide, as much as the lap of the

slide or expansion of the steam requires, and this he does by working the lap of the slide separately by the motion of the piston, so that the "lead," as it is technically called, of the engine, shall always be in the right direction. In this action of the slide valves, it is necessary that the induction and education passages of the steam should be the reverse of the usual way.

LUKE HEBERT, of Birmingham, C. E., *apparatus for producing and communicating artificial light*, Dec. 21st.—This invention consists in a method of lighting gas burners or lamps without removing the glass chimney, or shade, or other cover usually placed over or round a light. A plate of roughened metal is attached to the side of the lamp, or a part of the side of the lamp itself is roughened. A piece of metal, of the same length as the roughened plate, with a rack of teeth on the back thereof, is connected to the lamp in front of the plate, and so as to slide up and down the length of the plate. A barrel containing a spring, works in a box attached at the top of the rack; this barrel is provided with teeth on its circumference, which take into the teeth of the rack. At the top of the rack is a place to receive a match of any of the kinds which can be inflamed by friction. The apparatus works thus:—The drawing down of the rack turns the barrel, and winds up the spring therein. A spring catch now holds it down; a match is placed in the top of the rack, and when it is desired to light the lamp, the spring catch is released, and the rack is briskly raised by the action of the spring coil in the barrel; thus the match is rubbed against the roughened plate, whereby it is ignited, and the whole is so adjusted that the match will then light the lamp.

Another modification of the invention is described as applicable to the "Airand Vapor Light," in which the apparatus works in the centre of the burner. There is also a method described (not at all clearly), by which the state of the wick, whether in a proper position to be lighted, or not, is indicated.

The patentee states that this apparatus may be easily altered so as to be applicable to the lighting of lamps by means of matches which ignite by percussion instead of by friction; also that several match-holder racks may be placed round one lamp, and that a number of matches may be placed on one rack, so adapted as to be presented to the rough surface to be ignited in succession. This adaptation is principally intended for gas-lights which do not need daily trimming. The plan first described is for lamps that are daily trimmed.

RICHARD HORGSON, of Salisbury-street, Strand, *improvements in the forms or shapes of materials and substances used for building or paving, and in their combination for such purposes*, Dec. 26.—This is an invention which it is extremely difficult to describe without the aid of diagrams. The patentee states it to be founded on a new principle of application of the strength of bodies to the purposes of construction, which he calls the "stereotomy of the cube," and he proceeds through three skins of parchment to enter into the details of this newly-discovered principle; a part of the fourth skin is devoted to the description of the modes in which he applies it to the purposes of building and paving. The first plan of paving described, is one in which a cube of wood or other material is divided into two triangular pieces, by cutting it across from corner to corner diagonally: one triangular block is laid with its base on the ground, and the other with its base upwards, and hypotenuse to the ground, and so on; others are laid in a line, each block furthermore being placed a little on one side the preceding one, to "break the joint." Thus a pavement would be formed, the upper surface of which would consist of the bases and hypotenuses, alternately, of a number of blocks, the side sections of each of which would be triangular.

The other plans described are of a variety of modes of applying another combination of two triangles to building and paving. The blocks are to be formed of the shape of the outline of two triangular pieces, placed one upon the other, as before

mentioned; that is, one triangular piece being placed with its base downwards, and the other with its hypotenuse downwards, one side of each triangle meeting. These two combined, form a block, the tops and bottoms of which are horizontal, the one an inclined plane, the opposite side an inverted inclined plane, and the two remaining sides vertical. A pavement is to be formed of blocks the shape of this combination of two, by placing them in succession, the one partially upon the other, that is, the inverted inclined plane upon the inclined plane, the one row with the inclined planes lying in one direction, and the next row with the inclined planes in the other direction, the two rows being connected to one another laterally by pins in the vertical sides.

Various figures point out various ways of applying the invention to the construction of various kinds of roads, railways, arches, and columns. The patentee also states that frames of iron, with a similar outline shape, may be used for various purposes, also hollowed-out blocks of brick or pottery.

ENTERED AT THE BOLLS CHAPEL OFFICE, UP TO THE WEEK ENDING JANUARY 4, 1840.

(Continued from our last.)

ENGLAND.

JAMES TEMPLETON, manufacturer, Paisley, and WILLIAM QUIGLEY, weaver in Paisley, *an improved mode of manufacturing silk, cotton, woollen, and linen fabrics*, Dec. 12.—The inventor claims a new or improved mode of producing or preparing strips of silk, cotton, woollen, or linen, or of a mixture of one, two, or more of these materials, in such manner that the webs or lateral fibres of both cut edges of each strip are all brought upon one side, and into close compact with each other, and the re-wearing of such strips with the whole fur or pile uppermost into the surface of carpets, rugs, shawls, or other similar articles, at the same time that a ground-work or platform is woven for the same.

The web is placed in separate distances through the splits of the reed, in order that the web shall in some spaces be covered, and in other spaces uncovered by the web, which is worked in the method of what is technically termed gauze or cross weaving; when a roll of this new fabric is completed, it must be cut across the web, where the spaces are uncovered by the web, by which means the lateral fibres of both cut edges of each strip will hang loose: thus in working these strips into carpets, rugs, or shawls, both edges are brought to the upper surface, so as to form a fur or pile.

JOHN WRIGHT, Park-place, near Glasgow, *improvements in mixing or alloying iron with other metals, for the purpose of increasing its strength, tenacity, or cohesion, which alloys, among many other uses, are particularly applicable to the construction or manufacture of links for chains and rings, and certain machinery for effecting such manufacture*, Dec. 18.—This invention is for making links, rings, axletrees, cylinders, &c., of coils or hanks of wire, and immersing the same in a quantity of molten copper, so as to unite the whole in one solid mass.

In forming cylinders, the wire is placed round a wooden mould, and is properly secured to allow of its being removed from the shape or mould, when it is ready to be immersed in the molten copper, which is prepared in the following manner:—the red copper of commerce is melted in a proper vessel, and the scoria or dross must be skimmed from it; should any remain, pulverised glass must be added, so as to agglutinate the scoria, which may be easily removed; borax is used as flux for the copper. The hanks or forms of wire are now immersed in the molten copper, which insinuates itself into the interstices, and renders it, when cold, more firm and solid than cast-iron or other metal.

Another feature of the improvement is the method of making links or rings. A roll of wire being placed under a conical wheel, one end of it is taken and wound round the wheel, which is hollow, and opens with a hinge, to admit a formed link, and also

to add fresh links, for forming a chain; to this conical wheel is attached a cog-wheel, which also opens with a hinge, to admit the coil of the link.

When it is requisite to plait the link, a graduated wheel with an eccentric disc is placed at one end of the axle that supports the cog and conical wheel, to form the link; this eccentric disc causes a rod, that holds the wire, to move laterally from one side to the other, so that the wire is twisted in a plaited form, while the conical wheel revolves to make the link or ring. The disc wheel has a small detent moving on its periphery for the purpose of regulating the dial-hand, and to indicate the number of folds.

PETER LOMAX, of Bolton-le-Moors, Lancaster, weaver, certain improvements in looms for weaving, Dec. 19.—This improvement is for applying to the Jacquard loom a series of dents or hooks, whereby the knots or loops are formed on a counterpane.

The dents or hooks are thin pieces of metal, placed in an upright position under the weft, and as the loose thread or coarse weft is thrown across the waf, the dents or hooks are raised alternately to form the figured surface of knots or loops, and while the fine weft is thrown to form the ground of the cloth, the dents are held in their position by means of a treadle, which, on being depressed, allows them to fall from between the waf.

The second improvement is a Jacquard needle with two eyes, used for quilting.

CHARLES WYE WILLIAMS, Liverpool, Lancaster, certain improvements in boilers and furnaces, designed to economise fuel and heat, Dec. 21.—The inventor claims the method of introducing air to the bridge or flame bed, whereby the combustible particles are more completely ignited before they can be exhausted in the flue or chimney.

Firstly, he introduces two or more long square perforated tubes, so as to intercept the gases passing over the flame bed: the air that enters the holes at the ends of the tubes mingles with the flame, and assists in consuming the particles as they pass over the red-hot bed, formed of bricks that are made of fire-clay.

Secondly, by the application of distinct pipes, air is conducted to the bridge and flame-bed. This plan is adopted on occasions when the air cannot be introduced at the sides, but must be brought from the front or back through separate tubes.

Thirdly, to render a more complete ignition of the fuel in the furnace, perforated tubes are so situated in the ash-pit, that the air becomes equally divided in all parts, thus rendering combustion more perfect.

Fourthly, a current of air is admitted to the flame bed by means of a fan.

The last improvement is for introducing a moveable false bridge, to prevent the coal from reaching the flame-bed, as well as to shorten or diminish the surface of the fire.

FOREIGN PATENTS.—BELGIUM.

LIST OF PATENTS RECENTLY GRANTED BY THE BELGIAN GOVERNMENT.

(Continued from No. 20.)

Chevremont, L. J., mining engineer, residing at Ixelles, rue Careveld, No. 167, a patent of invention * for 15 years, for sundry methods of preserving wool, sail-cloth, cordage, &c., from dry rot and mildew.—Dec. 27, 1839.

Dowling, Thomas, residing at Brussels, Hotel de France, a patent of invention and improvement for 15 years, for improvements in the manufacture of felt hats.—Dec. 27, 1839.

Malmazet, sen., Deplanque, Sons, and Co., residing at Brussels, Place de Louvain, No. 5, a

patent of invention for 10 years, for a loom to manufacture all kinds of figured stuffs.—Dec. 27, 1839.

Urling, R. W., residing at St. Josse-ten-Noode, Rue des Arts, No. 139, a patent of importation for 10 years, for an electro-magnetic machine.—Dec. 27, 1839.

Dixon, Abraham, residing at Brussels, Hotel de Gronendael, Rue de la Putterie, a patent of invention for 15 years, for additional improvements in the process of water-proofing cloth, linen, cotton, paper, and other tissues,* as well as for sizing paper of all kinds, for which he obtained patents on the 1st and 29th of last July.—Dec. 27, 1839.

Devegni, Ange, engineer, residing at Brussels, Rue des Alexien, No. 64, (with M. Lavallée, solicitor, his representative), a patent of improvement for 10 years, for an improvement in the use of metallic cordage, for the purpose of traction,—such improvements consisting in using them without tension.—Dec. 27, 1839.

Devegni, Ange, (same address), a patent of importation for 10 years, for the use of metallic cords for the purposes of traction.—Dec. 27, 1839.

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.

MEETING OF THE ACADEMY OF SCIENCES, PARIS.

(Continued from No. 22.)

The Fine Arts.—A scientific foreigner, M. Jacobi, has been long engaged in one of the most interesting researches of the age; the possibility of converting the electro-magnetic influence, which is the cause of so many natural phenomena, into an available moving power, applicable to the ordinary purposes of life.† He now states that he can form, by means of the galvanic fluid, an ensemble of figures of any description, either embossed or indented, in relief or in creux. He even reproduces figures of considerable dimensions in bass-relief, obtaining them in separate fragments, which are capable of being afterwards united in exact juxtaposition. In this way he proposes to copy the celebrated engravings on the gates of the Baptistery of Florence. Thus in the present day, as we have paintings, at the bottom of which may be written *fecit lux*; (a motto, be it said, *en passant*, not always justly applicable), so shall we have sculpture bearing the inscription of *fecit fulmen*. This new process, which has no analogy with that of photophy, is in fact nothing but a very doubtful application to the fine arts of one of the first discovered effects of chemical decomposition by the voltaic action; the passage of particles one to another according to the change of poles. Besides the very first requisite is a model;—a metallic mould perfectly executed; for this production is only to be obtained slowly by a species of electrochemical moulding, curious enough certainly, but not so quick as the common method, and probably not better. It is peculiarly applicable to the production of metallic copies in relief, from a plate of copper previously engraved in creux; and of copies in creux from a plate in relief.

The process consists in plunging the plate, after it is engraved, into a saturated solution of sulphate of copper, and using it as a repellent pole. The attracting pole is also of copper, which becomes oxidized, and is dissolved; and replaces the copper

* This word "tissue," appears in the original, but we are not quite sure that paper is a tissue.

† We are credibly informed that some of the first engineers of London, last week, inspected an engine in the Blackfriars-road, the moving power of which is electricity in lieu of steam. The inventor, whose name we at present withhold, has succeeded perfectly in attaining this hitherto supposed unattainable object. The whole apparatus is contained in a box, not three feet square. An eminent engineer, on witnessing it in full operation, was affected even to tears. We can fully enter into his feelings.

which the voltaic action deposits upon the engraved plate. The action must not be too rapid. From 50 to 60 grains of copper per square inch, should be reduced in twenty-four hours.

Organic Chemistry.—A new and brilliant application of the principle of substituting one chemical body for another, (notwithstanding the objections that have been raised against this principle,) has just been made by M. Reynault, mining engineer. It appears that, any organic substance being given, it is possible to substitute either for a part or the whole of the hydrogen which it contains, a corresponding proportion of chlorine; and that in this way new compounds may be obtained whose properties are previously known.

In applying this principle to chlorydric ether, M. Reynault has discovered a series of six new and curious compounds, containing severally 2, 4, 6, 8, 10, and 12 parts of chlorine. These compounds are exactly similar, as to their composition, to those produced by the action of chlorine upon oleaginous gas, but very different as to their properties. According to the proportion of the chlorine, both the density of the compound and the density of the gas is increased, and it rises from the lowest degree of temperature to 200 degrees. Results very similar, and equally interesting, may be produced in the same way with common ether.

Hygiene.—Amongst the works brought under the notice of the Academy, which bear an undoubted character for general utility, and show great merit in the execution, is a work on Hygiene by Dr. Londe. It has already been translated into several foreign languages. It presents in a lucid point of view the whole range of information on this branch of medicine, which the Doctor has collected with much labor and research from the best authorities, ancient and modern. Hygiene is not only the art of preserving health, according to the usual definition, but that department of medical science, whose object should be to conduct both individuals and the species, not only as to their physical, but as to their intellectual and moral state, to the highest degree of development of which they are capable. This author considers that the study of the different objects which affect our health, should be subordinate to the study of the organs themselves which may be affected; and he thus brings under one view both the subject and the precepts of Hygiene.

STATISTICS.—PARIS.

In a discourse of M. de Rambuteau, at a meeting of the members of the Chamber of Commerce of the Seine, are some statistic details worthy of notice, which we subjoin:

The population and the buildings of Paris continue to increase. Since 1832, there have been granted 16,899 licenses for voitures, and 3000 new houses have been built. Of this number, 2000 licenses were granted, and 250 houses built in 1832. It appears from the census, that the average increase of the population is 20,000 souls annually. On this point the prefect observes, that the increase of population and of buildings has taken place, as might naturally be expected, in the distant arrondissements, where there is more space, and more open ground, such as the first, second, fifth, and eighth; whereas in the central arrondissements, in which there was already a dense population, there has been little or no alteration. Thus there has been no removal, but simply an increase of the population upon certain points; and if particular quarters of the city have been greatly improved and augmented, it has not been at the expense of the old ones.

The consumption of Paris, and consequently its revenues, have necessarily increased in the same ratio as the population. In 1838, the consumption of meat only was 90,989 beasts, 80,428 calves, and 427,618 sheep; and the amount of the octroi (city tolls) was 31,862,969 fr. The year 1839, however, presents a deficit, amounting to 1,200,000 fr., upon

* For the meaning of the terms *importation* and *invention* as applied to patents taken out in Belgium, the reader is referred to No. 5, Vol. 1., of the "INVENTORS' ADVOCATE," page 69, in which will also be found our remarks on the defects in the existing law.

which an allowance must be made for the reduction of the duties upon coal. Trade also experienced some difficulties this year; there being a much greater number of bankruptcies than in 1838,—929 instead of 438. This was in some measure, perhaps, caused by political disturbances, as well as by the numerous imprudent speculations in joint-stock companies; besides which, as the number of *patentés** was constantly increasing, the number of failures naturally increased also. On the 31st December, 1838, of the four quarters' direct contributions, amounting to 30,634,521 fr. 33 cent., 28,405,527 fr. 12 cent. had been paid; and the expenses of prosecution, as compared with the years 1836 and 1837, had considerably diminished.

"These are, however, misfortunes," said the Prefect, "which are amply counterbalanced by the general prosperity of the trade of Paris, considered in its relations with France and with foreign nations, and by the distinguished position held by our manufacturers and tradesmen at this year's exhibition." The exportations from Paris to foreigners only, which were increased already in 1838, by 32 millions, have still continued to increase, and during the first eleven months of 1839, amounted to 124,472,000 fr., a sum equal to the whole year's exportations in 1838.

"With the exception of small *patentés*, who have felt the force of circumstances, and for whom the administration always has had, and always will have, every possible consideration, compatible with the due execution of the laws, the payment of the direct contributions has experienced no more difficulty in 1839, than in the preceding year."

There is a constant progress in the population, in new buildings, in commercial exports, in fact, in all that really constitutes the strength, the improvement, and the riches of a great city. It is the same with every department more immediately under the influence of the administration, viz. the schools, the savings' banks, the Mont-de-Piété, the hospitals, and the municipal works of Paris.

There are 188 places of asylum. The schools of mutual instruction, *écoles simultanées*, schools of workmen, schools of adults, and schools of design, contain 38,000 pupils; and in 1832 they scarcely contained 20,000. All these establishments bear the most promising fruit, by spreading more and more amongst the population the elements of knowledge, the principles of order, and the love of our institutions, and by instructing them in their true interests. "Out of a thousand facts, I will only cite one," said M. de Rambuteau;—"During the late disturbances in the capital, a number of rioters repaired, about nine o'clock in the evening, to a school of adults in the faubourg Saint Antoine, containing 400 pupils, all workmen;—they expected to meet with a reinforcement, but not one of these workmen joined them, and they all complained of the interruption." During the last three months, notwithstanding the high price of bread, the sums paid into the savings' banks exceed those that have been taken out, by 990,207 frs. The number of books delivered out from these banks is also increased. On the 25th April last, it amounted to 105,000, three-fourths of which belonged to workmen, or to servants. Fresh improvements are constantly being made in the administration of the Mont-de-Piété. The effects of the director and the council are invariably directed to lower the interest on the sums lent, to afford every possible facility to the public to open accounts for the redemption of pledges, and to increase the number of branch establishments.

Infirmaries and hospitals are not behind-hand in this career of improvement. The infirmary of Bicêtre has been augmented by the buildings of the old prison, and at the same time freed from an unpleasant neighborhood. Considerable progress has been made in the method of treating the insane. A clinical hospital has been opened near the School of Medicine, and an amphitheatre for dissections now

allows the suppression of partial establishments, which were equally unhealthy and dangerous. A hospital has been founded at l'Oursine, containing 300 beds. The infirmaries of la Reconnaissance and Devillas have been opened. The addition of 300 beds has enabled all the orphans to be together at the Enfans-Trouvés. Arrangements have been made at the farm of St. Anne, for the reception of 150 or 200 convalescents from among the insane. The building, which was pulled down at the Hôtel Dieu, in order to throw open the quay, has been replaced by buildings of greater magnitude, either at the Hôtel Dieu, or at the infirmaries of Beaujou and Neckert; and for the last seven years, although the annual expenses amount to 13 millions, 4,500,000 frs. have been employed in these augmentations. There are now 5,400 beds in the sick wards, and 11,800 occupied by the aged, by children, or by the insane. The improvements of every kind in the treatment of the sick, and a better division of the different cases, have lessened the average duration of disease. In 1803 it was 36 days, and in 1829, 30 days; at present it is only 24 days, so that with the same number of beds, a greater number of sick can be received. In 1839, 76,000 sick were received, in 1803, only 45,000.

Whilst hospitals offer such extensive assistance and comfort to the poorer classes, the number of indigent persons, so far from increasing, as has been erroneously asserted, sensibly diminishes. In 1832, the census returned 68,986 indigent; in 1835, this number was reduced to 62,539; and in 1838, still farther reduced to 58,500. In 1832, the number of indigent was 1 in 11 of the inhabitants; in 1838, only 1 in 15; and yet, during the last five years, the population of Paris is increased by 130,000 souls. There is also a remarkable decrease in the number of foundlings. In 1832 and 1833, and up to 1837, they averaged annually from 4,000 to 5,000. The measures adopted in 1838 and 1839 reduced the number to 3,037 for each year. In 1838, more than 2,500 indigent mothers received such relief at home, as enabled them to keep their children. The amount of the relief afforded was 84,000 frs. Half of the mothers confined at the *Maison de la Maternité*, (lying-in hospital) likewise kept their children, whereas formerly more than three-fourths abandoned them. Since 1832, drains have been formed, extending 66,009 metres, or about 16 leagues and a half. Streets to the length of 20 leagues, and whose superficies measured 700,000 metres, have been paved. Pipes have been laid down for conducting water, to the length of 102,000 metres; and six large basins have been made, as reservoirs, capable of containing 500,000 hectolitres (11,000,000 gallons) of water. 1,000 fountains, marking different boundaries, have been constructed. 108,000 metres of pavement, (*brottoirs*) have been laid down; and near 2,000 gas lamps have been fixed. All these works have cost about 20 millions.

Every effort is being made at the same time to enlarge the old streets, and to open fresh communications. Since 1830, the municipal council has devoted to this object more than 16 millions.

Works of architecture have been no less attended to. During the last six years only, nearly 18 millions have been expended in public buildings which are either completed or in progress. This sum has been laid out upon *Mairies*, schools and colleges, upon the church of Notre-Dame-de-Lorette, the church of Saint-Vincent-de-Paul, and other religious establishments; upon a house of correction for youthful prisoners, and the dépôt of convicts of la Roquette; upon the Place de la Concorde, and the additional buildings to the Hotel-de-Ville.

In the department of *ponts et chaussées* (bridges and roads) improvements are equally going on. Three new gates, whose superficies measures 43,000 metres, have been constructed at Paris. Works have been carried on at the quays, so as to complete a line of nearly two leagues on each bank of the river, supplying at the same time an extensive means of communication, and convenient and healthy promenades, which traverse the whole city. 3,500,000 frs. have been spent upon this object alone since 1832. The roads throughout the whole department

are being improved, mended, and rendered more healthy; several new ones are about to be formed, to facilitate the communication between the different parts of the department, and between the department of the Seine, and the adjoining departments. More than nine leagues of high road have been made; and the total expense under this head, for the last few years, is twelve millions.

Lastly, the administration is using its utmost endeavours to remove the *cotière* of Montfaucon, the great mart of infection, of which the population of Paris has so long and so justly complained. In a few months, the place for slaughtering horses will be removed to the new establishment in the plain of Vertus: the *cotière* will be transferred to Bondy, at which place the works are rapidly advancing, and before two years Montfaucon will have entirely disappeared. Before that time, also, the river of Bièvre will be rendered navigable. This undertaking which interests so much one of the most populous and industrious quarters of Paris, and on which more than a million has already been expended, will now soon be completed.

OBITUARY FOR 1839.

Frederic VI., King of Denmark, opens this funeral procession, and near him we find two monarchs of distant countries, Mahmoud II. and Runjeet Singh, whose names will not be forgotten in the page of history. Other royal and princely houses have lost the reigning Duke of Nassau, Princess Mary of Orleans, the young Archduke Maximilian (the son of the viceroy of Italy), Prince William of Saxe-Weimar, the Dowager Duchess of Anhalt-Bernburg, the Dowager Duchess of Tour et Taxis, the Landgrave of Hesse-Homburg, and Prince Milan, the sovereign of Servia.

Two princesses of the family of Napoleon, his sister Caroline and his niece Charlotte, the daughter of Joseph, and the widow of the eldest son of Louis, died a few days apart.

At the commencement of 1839 the church of France had four representatives in the Holy College, three of whom have ceased to exist; the Roman purple has been deprived of the French Cardinals Fesch, Isoard, and Latil, and of Cardinal Gregorio, the son of King Charles, and of Cardinals Sals and Iseri. The death of the Archbishop of Paris has closed a disastrous year by a public mourning. Galard, the Archbishop of Anazarbe and coadjutor of Rheims, Montault, the Bishop of Angers and Bruté, the French Bishop of Vincennes, in the United States, deserve to be piously regretted. We must not forget the Abbé Salandre, the vicar-general of Paris; the Abbé Bachelot, principal missionary in the Sandwich Islands; the Abbé Dumont, the eldest member of the French clergy; and Dom Antony, the Abbot of La Trappe de Melleraye.

The peccage has lost seven of its members, nominated by the restoration,—the Dukes de la Tremoille and de Parman, the Marquis de Simonville; Counts Truguet, Charles de Vogue, de Vaugeois, and Emmery. Nine of those members who refused to take the oath of allegiance, or who were dismissed from the Luxembourg by the reaction of 1830,—the Cardinal Dukes de Latil and d'Isoard, the Dukes de Croy, d'Havré, de Chevreuse, d'Hardcourt, and de Blacas; the Marquis de St. Mauris, the Abbé Count de Quelen, and the Count de la Bourdonnaye. Eight of its members who owed their promotion to Louis Philippe; the Duke de Bassano, the Count Christian de Nicolai and de la Briffe, Barons Lallemand, de Talleyrand, de Prey, and Bernard, and the first president Deforest de Quartdeville. The Chamber of Deputies, which had lost two of its members just as it was dissolved, has to add to Messieurs de Saint Pern, Couckan, and Haas, six others, Messieurs Paillard du Clér, General Demarcay, Eusebe Salverte, Letiène, Merlin, and Bernard.

Amongst those formerly belonging to our deli-

* In 1832 there were 51,751, *Patentés*; in 1837, 66,148; in 1838, 67,700; and in 1839, 70,491. Thus, since 1832, there has been a progressive augmentation of 18,740 *Patentés*.

rative assemblies, whose deaths became known in 1839, we must mention Marquis André Doria, the Marquis de Canda; Baron Girod (de l'Ain), and Messieurs Pavy, de Bruère, de Vaurois, Sallier, de Maussion d'Arensy, de la Huproye, Cavé d'Haudicourt, de Rosny, Charles Beslay, d'Arnaud, and Nully d'Hécourt.

To the chiefs of our army, already mentioned as peers or deputies, we have to add Lieutenant-Generals Count de Rivaud de la Raffinière, Baron Bouchu, Viscount de Barbot, Baron Séché, Baron le Noury, Count Merlin, Viscount d'Osmond, Viscount de St. Geniez, Count Verdier, Baron Félix, Count Francis de Sainte Aldegonde, Count de Caumont, Count Gibon de Kérouzé, Baron Lepin, Baron de Mallet, Baron Avile, and Baron Buget.

Major-Generals Picquet du Boisquy, Baron Augustus de Rapat, de Niceville, Baron Cotté, Count de Penhonet, Bonne, Count de Tyssières, Baron Grivis, Baron Boutin, Lamy, Menne, Baron Clément, Taquy, Baron de Cossen, Chabert, Noël Girard, Baron Soyez, Maugain d'Oins, Baron Lacour, Baron Lefebvre Desvaux, Bellangé, Baron Christophe, Baron Schwyther, and Baron Lafette.

Colonels—Baron de St. Jacques, aide-de-camp to the Duke d'Enghien; Marquis de Sauzillon, Naudet, de Montullé, and de la Roquette.

We must not forget to inscribe here the illustrious General Allard, who has raised the French name to such a glorious height, and whose death is one of the most irreparable losses of the year.

Besides Admiral Tonquet, the French navy has to deplore Rear-Admirals Hamelin and Raymond Gocault, and Captains Marquis de Potirat, de Montziry, Garnier, and Laurens de Choisy, and Pierre Desse, captain of the port of Bordeaux, whose name is celebrated in the annals of humanity.

Among those who have occupied places of rank in France, we must mention Count Audigné de Mayneuf, first president of the Cour Royale of Angers, which office he threw up; Messieurs Bonnat, and Voisin de Gartempe, jun., councillors at the Cour de Cassation; Borel de Batizel, and Ollivier, ex-councillors at the same court; Baron Duvayrier, formerly first president of the Cour Royale de Montpellier; Marquis Urbain Gautier, ex-procureur-general at Pau; Counts de Cobbert, Maulevrier, and de Caux, ex-ministers plenipotentiary; Count Charles de Puysigne; Barons Creuzé de Lesser, Puyre, de la Magdalene Vernheil de Puyraveaux; General Jullien, and Messieurs Hofstede and Thomas, ex-prefects; Lepasquier, prefect of the Jura; Courtier, prefect of police during the hundred days; Baron Lagarde, secretary-general of the directory; Eustache and Coic, inspector-generals of the ponts and chaussées; Barons Regnault and Duprat, of the commissarial department; Count Outfre, a faithful Vendean, who died in exile; Messieurs Duparquet, master of requests; Emmanuel de Grouchy, secretary of embassy; Marc, Legrand, and Gobert, rectors of the Academies of Caen, Rennes, and Orleans; Parquin, a lawyer of merit; the celebrated manufacturer, Richard Lenoir, and Lafarge, who founded a bank under that name.

(To be Continued.)

BELGIUM.

M. NOTHOMB'S REPORT ON THE RAILROADS.

(Continued from No. 22.)

There will also be an addition of 41 locomotives, and 42 tenders; which will make the number of locomotives in all 123, and the number of tenders 113, and these numbers will not be exceeded.

42 locomotives and 36 tenders either have been, or will be furnished by the engineers of England; and 81 locomotives and 77 tenders by the engineers of Belgium.

The account with the English engineers is as follows:—

	Francs.	Francs.
1. From Stephenson ..	30 locomotives 1,094,705	
	24 tenders .. 111,964	
	For exchanges 98,250	
		1,304,919
2. From Longridge ..	10 locomotives 403,200	
	10 tenders .. 56,320	
	For exchanges 62,080	
		521,600
3. From M.M. Sharp, Roberts, Fenton, Murroy, and Jackson	2 locomotives 73,355	
	Total value of the articles supplied by the English	1,899,874

The account with the Belgian engineers is as follows:—

	Francs.	Cents.
1. From Cockrell ..	68 locomotives 2,557,867	
	58 tenders .. 276,760	
	For exchanges 199,473	
		3,034,100
2. From Meeus Brion, of Brussels ..	10 locomotives 395,000	
	16 tenders .. 72,000	
	For exchanges 45,060	
		512,060
3. From Regnier Pouclet, of Liège	3 locomotives 108,000	
	3 tenders .. 11,400	
	For exchanges 1,800	
		121,200
Total value of articles supplied by Belgians	3,667,360	

It thus appears, that of the sum of 5,567,234 francs, the total expense incurred for locomotives and tenders, three-fifths have been laid out in our national establishments. The price of locomotives varies, according to their dimensions, from 36,000 francs to 40,000 francs that of tenders from 4,000 francs to 6,000 francs.

Up to the 30th of last September, the locomotives had travelled over a space of 357,818 leagues. The total outlay was 6,422,071 francs 47 cts., giving an average of about 17 francs 95 cts per league, which sum may be thus divided:—

	Fr. Cts.
Wear and tear on the lines of road, and police on the lines	4 72
Expenses of the trains	10 46
Office keepers, stations, and police at the stations	2 77

From the 1st May, 1839, to 1st January, 1840, this average has varied from 14 francs 59 cts to 21 francs 6 cts. The average for the last nine months is about 14 francs 96 cts, being the same as it was when the traffic was much smaller.

The railway administration is thus divided:—the engineer, Simons, has the direction of the Eastern line, from Aix to the frontiers of Prussia; Inspector Noël, the line from Ghent to the frontiers of France, by Courtrai; chief engineer, Grotaers, the line of Hainault; and Inspector Visquain, the lines of Namur and Luxembourg. M. Masui, who has the general direction, is occupied in the formation of occasional slidings on those railways which are in operation; whilst, at the same time, he superintends the works, and attends to the *materiel* on the lines which are constructing.

To meet the expenses occasioned by the construction of these different lines of railway, two successive loans have been voted by the Chambers, and negotiated by the government, viz.—a loan of 30 millions, authorised by the law of June 18, 1836;

and a loan of 37 millions, authorised by the law of May 25, 1838. Out of these 67 millions, the real sum received by the Treasury has been 60,520,363 francs 10 cts, of which 3,860,777 francs 31 cts have been applied to the common roads, and 56,659,585 francs 79 cts to the railroads. We shall proceed to give an account of the employment of this latter sum, after making the two following deductions:—

	Francs. Cts.
1. Expenses of the different works for the two first years, before a special allowance was made in the budget for this object	599,908 40
2. Balance in hand on the 30th Sept. last, the day to which the accounts were made up	1,395,363 85
	1,995,272 25

The remaining sum of 54,664,303 francs 54 cts is accounted for by the minister of public works in his Report, as follows:—

LINES COMPLETED.	LINES IN PROGRESS.		
Francs.	Cents.	Francs.	Cents.
35,406,996	91	2,109,918	71
6,240,886	51	22,455	71
		8,300,135	48
		1,394,473	32
		178,590	84
		1,010,894	78
		47,211,526	42
		6,441,862	34
		54,664,303	54

Thus 47,211,526 francs 42 cts have been absorbed by the lines of railway which are now open, the extent of which, as we have before stated, is 62 leagues, and only 7,837,246 francs 19 cts, including the balance in hand on the 30th September last, either have been, or are to be expended upon the lines in progress, the extent of which cannot be less than 44 leagues.

At first sight, this statement is striking, and calculated to cause some anxiety about the magnitude of the sums which the nation must still pay to complete the undertaking; but it is as dangerous to exaggerate evils, as to treat them too lightly. On looking more accurately, we find that of the 47 millions expended on the lines that are open, 10 millions and upwards were for building stations, and providing the *materiel* of transport, and that very little, if any addition, under this head, will be wanted, when the whole 110 leagues are in operation. To ascertain the exact cost per league, of the 62 leagues which are completed, the sums in the first and fourth column must be added together. They amount to 36,801,472 francs 23 cts, which, divi-

ded by 62, make the average cost of a league about 594,000frs. According to this calculation, the 48 leagues in progress will cost altogether 28,512,000frs, whilst the sum available for them is only 7,837,246f. If to this be added the 12 millions, for which sum an issue of treasury bills has been demanded, the total will still be only 19 millions; whereas, if allowance is made for contingencies, 25 millions at least should be reckoned upon as the amount required. In fact, it appears to us, under all circumstances, that the 110 leagues of railway cannot possibly be completed for less than 80 or 82 millions,—that is to say, for about 728,000frs a league, including every thing. And in stating this sum, we are speaking only of single, not a double way of lines. For a double way, 45 millions, instead of 25 millions, would be required; and the 110 leagues would cost a hundred millions, or 909,000frs a league. This is moderate, when compared with the sums paid by France and England; but it is considerable, when considered as capital, for which an enormous interest must be paid. At all events it is three times as much as the nation expected, according to the promises held out.

(To be Continued.)

GHENT.

THE PHOENIX.

The following article, most important to the interests of Englishmen, is copied from the *Organe des Flandres*. It will be perused with considerable attention, if not with alarm:—

We see, in a French journal, an interesting notice of one of our principal establishments, the *Phoenix*. We take the opportunity of reprinting it, because we know that the inhabitants of a town are not always the best judges of the useful or the curious objects which are to be found in their own vicinity. But very lately it has been said, and repeated with some degree of confidence, that the establishment at Seraing has supplied Belgium with the entire stock of her machines; which leaves it not impossible to the imagination to conceive, that the existence of the *Phoenix* at Ghent might have been forgotten in the scale of actual importance.

It is necessary, however, that all the world should know that such a place really exists, and attention is particularly requested to the following article.

This trade, for we can call it by no better name, so ably carried out in all its departments, and offering to *home* as well as *foreign* purchasers the cheapest market, presents so many advantages, that we should be puzzled to point out an equal opportunity:—

PHOENIX COMPANY.—This establishment covers from 1,000 to 1,200 feet; on the one side workshops are built, in length 400 feet, in breadth 40; some of these buildings are from two to three stories high—in the middle of the yard is a gasometer for the supply of 1,500 jets—on one side of the building is a steam chimney, of the height of 130 feet, with the gas apparatus &c.; on the right side of the square is a building covering 200 feet of ground two stories high, which serves as a workshop and for the manufacture of engines; in the extreme corner the gas-apparatus may be discovered; on the left is the iron-foundry, copper-foundry, stables, &c. At the extreme end is the tool-house, 350 feet in length, with the carpenter's shop; and in their immediate neighborhood 50 forges are at work, with the complete apparatus for casting. The factories are furnished with all sorts of tools, comprising 10 machines for flattening metals of from 5 to 30 and 40 feet in length, and from three to five in breadth; machines for working cylinders, both in iron and copper, three and six at a time; machines for boring to the diameter even of six feet; 20 parallel revolutions, fed by young apprentices from 10 to 15 years of age.

The whole establishment consists of 600 workmen and 250 apprentices.

The direction of this establishment is confided

entirely to an Englishman, aided by English and Flemish workmen. The tenth part of these workmen may be said to be composed of Flemish and Walloons.

The annual production of this firm amounts to some millions of francs; a thousand spindles are constantly at work for flax-spinning, and 2,000 spindles for cotton-spinning, without taking into consideration the engines, hydraulic presses, friction calenders, wool-carding, and other machinery.

Not to occupy our space further, we may still remark that the perfect working of the engines, and the excellent order in which everything is conducted at the *Phoenix*, leaves nothing to be desired in this vast establishment.

The show-room presents the picture of an immense bazaar, which the workshop has provided for in detail.

The machines which are employed at the *Phoenix* consist of one steam-engine, of 25-horse power; two others of 15-horse, low pressure, which serve the foundry; and another high pressure engine for the forges; amounting to a total of 50-horse power or thereabouts.

It may easily be conceived, from the excellent order which reigns in the factory, and the remarkable beauty which may be discovered in the various articles which they turn out, and more particularly the low price at which the market is furnished by them, that Holland, France, Prussia, Italy, and Austria, have been large buyers; considerable importations have been effected even to Russia, and at this present moment two splendid spinning machines at Ghent, perhaps the most beautiful in construction in the world, are in operation, furnished by the society of the *Phoenix*.

Before closing this article, it may not be unimportant to observe that the attention of all engineers is directed to the establishment of foreign engine-rooms on the Continent. The late sale of Mr. Cockerill's establishment at Seraing, to Russia, leaves the complexion of the question without a redeeming tint.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and PATENTEE'S RECORDER," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
Bogota	Denmark	Nevis
Bahamas	Dominica	New Brunswick
Barbadoes	France	Newfoundland
Berbice	Gibraltar	Nova Scotia
Bermuda	Greece	Quebec
Brazils	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Heiligenland	St. Lucia
Caraccas	Honduras	St. Vincent's
Cartagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Columbia	Laguayra	Trinidad
Corfu	Malta	Zante
Cuxhaven		

It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their News-men, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 5, are NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"G. J. B."—The mere alteration of some immaterial parts of the patent machine, will not remove D. J.'s. liability for infringement.

"H. Smithson," Godalming.—If the ornament on the article of manufacture be of metal, the registry of the design will give the right thereto for three years.

"Subscriber in advance."—Either at the Enrollment, Petty Bag, or Rolls chapel, offices.

"H. B. Z."—We have forwarded you our first volume, by your agent, as requested.

"P. Barnard," Macclesfield.—Not until his patent has expired.

"D. Johnson."—No, not after the time for specifying has elapsed.

"Patentee."—The circumstances stated, constitute a distinct piracy.

"Erratum."—Page 2, No. 22, for "perspective," read "respective manufacturers."

"A Subscriber, No."—The publication of a specification renders it impossible to obtain a patent for the invention specified, in France, Belgium, and other Continental states. From the date of such publication, the invention is considered public property in all those countries. We have a correspondent at Stockholm. The patent law in Norway is very uncertain. It is rather a Royal privilege than a law. If our correspondent will give his address, his second query shall be answered to his satisfaction.

"A Constant Subscriber" might apply to Mr. Canuing, Rue St Lazare, No. 24, Paris, but he is requested to make his communication, confidentially, to the London firm.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANS CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, JANUARY 11, 1840.

We have repeatedly taken occasion to direct the notice of our readers to the establishment of Mr. Cockerill at Seraing, which has lately become, by purchase, the property of Russia. We find a boast in one of the French papers, that "from this factory, Belgium has been furnished with the entire stock of her machines." We should have thought that this alone would suffice to open the eyes of our government as to the impolicy of throwing

impediments in the way of exporting British machinery; but they still remain unmoved, while the injury to this country is increasing daily.

In our paper of to-day, will be found a description of another large factory, established by a company at Ghent, whose operations are being carried on to an almost incredible extent, while we are "looking on" in amazement, and without making an effort to check the evil, though it is positively within our power to do so. The consequence is obvious; and the remedy, when applied, will come too late to be of service. To impress the matter more fully on the minds of our readers, we subjoin the following extracts from the article referred to. They are as faithful in their detail, as they are ominous in their import:—

"The annual production of this firm amounts to some millions of francs; a thousand spindles are constantly at work for flax-spinning, and 2,000 spindles for cotton-spinning, without taking into consideration the engines, hydraulic presses, friction calenders, wool-carding, and other machinery. *** The show-room presents the picture of an immense bazaar, which the workshop has provided for in detail.

The machines which are employed at the "Phoenix," consist of one steam-engine, of 25-horse power; two others of 15-horse, low pressure, which serve the foundry; and another high pressure engine for the forges; amounting to a total of 50-horse power or thereabouts.

It may easily be conceived, from the excellent order which reigns in the factory, and the remarkable beauty which may be discovered in the various articles which they turn out, and more particularly the low price at which the market is furnished by them, that Holland, France, Prussia, Italy, and Austria, have been large buyers; considerable importations have been effected even to Russia, and at this present moment two splendid spinning machines at Ghent, perhaps the most beautiful in construction in the world, are in operation, furnished by the society of the 'Phoenix.'"

Who can peruse the above, without feelings of well-founded alarm?

NEW INVENTIONS.

HARBOUR CRANE.

A crane, capable of raising great weights at the harbour, having been found indispensable a considerable time since, Mr. Leslie, engineer to the harbour, executed a plan for a machine capable of

raising thirty tons. The merit of the design has been very extensively acknowledged among professional men, and those who are initiated in mechanics. Mr. Peter Borrie, the contractor for the work, has been engaged for some time past in casting the different parts of the crane. The novelty of the design, and the magnitude of the work, evince the skill and attention which must have been bestowed upon its completion. On Monday last, the post or mast, weighing 25 tons, was conveyed from the foundry to the site of the crane, at Earl Grey's dock. It was placed upon two strong wagons, and required no fewer than 12 horses and 230 men to drag it along. The procession from Trades-lane, along Dock-street and the Middle Quay, was striking, and brought together an immense number of spectators, who were much at a loss to understand what purpose such a huge mass of iron was intended to serve; for the gross weight of the post, including the back and side tension bars, friction collar, hoops, &c., is no less than 25 tons, or within 10 tons of the weight which it is intended to lift. The pedestal for this crane is a beautiful piece of masonry; and rising considerably above the Quay, it was necessary to raise the post to an elevation of 55 feet before it could be put in its place. This was done by two tackles and windlasses of great power,—the upper blocks being fastened, at a height of 60 feet, to the apex of three shear poles. The whole time occupied in the transit of the axle-pole, and in raising it and lowering it into the cast-iron cylinders, did not exceed six consecutive hours. Ten men were found adequate to perform the whole operation of raising and lowering the post, and adjusting it to its proper position in the cast-iron cylinder. The extreme length of the post over all is nearly 45 feet.

As the crane is not yet completed, we cannot speak of it as a whole; but there cannot be a doubt that it will be a great advantage to the large class of steamers—especially to our yet unrivalled London steamers. And we understand that as soon as it is ready and disengaged (for the steamer Perth has secured the first turn), a very large steamer from a distance is to be brought to Dundee in order to get in new boilers. In this way, we have no doubt an ample recompense will be obtained for the great accommodation now to be given for the shipping at the port. Much work, and a considerable amount of shore-dues, may, in consequence of the facilities afforded by the crane, be brought to Dundee, which otherwise would have been lost to it. The testing of this vast machine will be a process of some interest; and we have no doubt the successful result will add to the well-earned reputation of Mr. Leslie, and be highly creditable to Mr. Borrie, by whom the work has been executed.—*Dundee Courier.*

GILBERT'S IMPROVED GAS STOVE.

The common gas stove is merely a covered cylinder of iron, containing a hollow ring communicating with the gas pipe, and pierced with minute holes, from which the gas burns in small jets. The products of the combustion, mixed with a portion of gas, (for the gas is never wholly consumed when burnt in a jet) are discharged into the room, the air is thus rendered very unpleasant, and even unwholesome; hence the use of these stoves is confined to halls and shops where there is a very free ventilation. In Mr. Gilbert's improved gas stove, these evils are entirely avoided. The gas is first mixed with a sufficient proportion of atmospheric air to ensure its complete combustion, and then passes through a plate of wire gauze, on the surface of which, it burns with a flickering blue flame. The combustion takes place within an oblong iron box, which is thus heated sufficiently to diffuse a soft and equable warmth through the apartment. A pipe carries off the vapor into the chimney. No inconvenience or risk whatever is connected with the use of the stoves, and the fire can be lighted or extinguished with the same facility as a common burner. This consideration, with the perfect freedom from dust, and the avoiding of all trouble in keeping up the fire, makes the

stove particularly desirable for a school-room. It also promises to afford an easy, cheap, and effectual means of warming a conservatory or hot-house; and it may be conveniently introduced into dwellings, for, in addition to its use in warming the apartments, it may be employed, to a considerable extent, for cooking. The stove fixed in the Bath City School was made by the inventor, Mr. Edward Gilbert, civil engineer, &c., of Falmouth, and was exhibited last month at the annual exhibition of the Royal Polytechnic Society of Cornwall. Any person wishing to see it, may be gratified by calling at the school-room.—*Bath Chronicle.*

THE "RETARDER."

An ingenious invention for regulating the speed of carriages in descending hills, has just been perfected by Mr. R. W. Jearrad, of Westhall, who has taken out a patent for his discovery. The apparatus, which is extremely simple in its construction and application, is termed a Retarder, and altogether supersedes the present clumsy and insecure contrivance of the old-fashioned drag. Its operation consists in so controlling the revolutions of the fore wheels of the carriage, as to check the speed acquired in descending slopes, and that by the mere turning of a handle, which may be placed in any part of the vehicle, so as to be under the direction of the coachman or guard, without the necessity of getting off his seat. Several experiments have been already performed, with a view of proving the invention, by attaching the apparatus to some of Mr. Dangerfield's stage-coaches, and all of them have, we believe, proved completely successful. When the number of serious accidents which ensue from the insufficiency of the drags at present in use are considered, we cannot but consider Mr. Jearrad's invention of the Retarder, as a most important and valuable addition to the useful discoveries of the present day.

EMBOSSING.

We have received from Messrs. Summers and Smith, a very beautiful specimen of embossing upon card. It represents a raised profile portrait of her Majesty (conveying an admirable likeness after Lane), and on either side oval medallions, with full lengths of Minerva and Apollo. The Royal head and the mythological vignettes are alike beautiful in execution, and have been produced by a die so sharply set as to bring up the most minute effects with clear and delicate precision. The bust of the Queen is as polished and smooth as though it had been chiselled in marble. This fine embossment is so cast, as to be adapted for lid ornaments to "envelope" cases, scent-boxes, and the ordinary embellishments of boudoir and drawing-room tables.

THE NEW PATENT FORTE-PIANETTE.

The forte-pianette is manufactured by Tomkison, the eminent piano-forte maker. In size and shape it resembles the piccolo or micro-chordan, but the power and brilliancy (from the peculiar construction of its action) is not inferior to the semi-grand. The pianette has a fine rich quality of tone, with equality, and the touch exceedingly delicate. The instrument is admirably calculated for the concert or drawing-room, as the whole of the performer's bust is over the top, causing no obstruction to the voice whatever.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

GRAND JUNCTION AND MANCHESTER EXTENSION RAILWAYS.—We have before noticed the agreement between these two companies to be the running in of the Manchester and Birmingham line at Crewe, with permission to leave it again at Stafford, should the promoters of the Extension line wish to carry it from thence on to Rugby. The tolls, we believe, are made very favorable. If the Manchester line joins at Crewe, the tolls are to be four-fifths of a penny per passenger per mile, and the same for a

ton of goods per mile. The Manchester Company are to be at no expense for maintenance or watching of way, or water; or use of stations, except they want new ones, which they must build. They have, in fact, nothing to find but their own engines, carriages, coke, and men to go with them. Upon the same terms the Grand Junction are to run on the Manchester Extension when made. If the Manchester join at Stone, they would have, in place of four-fifths, to pay one penny. It is presumed the Birmingham Company will grant equally favorable terms. In case of any difference, the companies are to refer the settlement to Lord ***^{*,} and abide by his arbitration; so that there is no chance of a rupture. We must say we are right glad to hear of the amicable union of those two great companies, and hope it will be a lasting and profitable one to both. It certainly is good for the Manchester public, inasmuch as it will enable the company to carry them at a lower rate than probably they possibly could if they had to construct a new line. The part between Manchester and Crewe, thirty miles, by which, we believe, fifteen miles are saved, will cost about £700,000; and the Extension to Rugby £1,300,000 more.—*Railway Magazine.*

EDINBURGH AND GLASGOW RAILWAY.—The operations at the west end of this railway, though seemingly to the eye going on but slowly, are in reality proceeding with great spirit. The immense labor attendant on the cutting the tunnel, a great part of which goes through the solid rock, renders the progress of the workmen necessarily slow; but when the obstructions to be overcome are taken into consideration, it is greater than might have been expected. At the "eye," on this side the Lunatic Asylum, the tunnel has now advanced upwards of three hundred feet northwards, and the workmen have begun to carry it southwards, to meet those employed at the entrance in Bell's Park, where a considerable bore has now been made. At the spot first mentioned, visitors will find an inspection of the work highly interesting. The tunnel, so far as cut, has a most spacious appearance, and not unpicturesque, the darkness throughout being partially relieved by the lights of the miners, who are at work at its furthest extremity. The operation of "blasting" is going on with little intermission; and there is something really grand in listening to the report of each successive explosion, as it thunders along the huge subterranean vault—the visitor being safely guarded from the projected fragments by ensconcing behind a wooden erection raised for the safety of the workmen. It is understood that a very little north of the point where the miners have already penetrated, the rock dips so much, that this obstruction will be no longer felt, and an arching of stone, as in the other parts of the tunnel, will then commence. About one hundred tons of stuff are at present taken daily out of the tunnel at this part of the works. At the "eye," to the northward of the Lunatic Asylum, the tunnel has been arched for about ninety feet towards the canal, and an opening, to facilitate still further the operations, is now making immediately on this side of the canal, while another will shortly be made at the terminus of the tunnel beyond it. Six months have already been employed upon this tunnel, and we believe other six months will be required for its entire completion.—*Scottish Guardian.*

NORTH MIDLAND RAILWAY.—The directors of this railway have been induced, by the progress of the works, and the approaching completion of many contracts, as well as the payments becoming due for engines, carriages, &c., now in course of delivery, to issue the £50 shares, which they are empowered by their last act to create. In the present state of the money market, however, they have thought it right to offer the new shares of £50 each to the proprietors of original shares at the price of £40 per share: the new £50 shares will be entitled to the same dividend, *pro rata*, as the original £100 shares, that is, one half. The first instalment of £10 per

share on the new shares is payable on the 15th of January; and we understand that the other instalments will be called for at short periods. The directors are confident that the capital raised by the new shares will complete the undertaking.—*Leeds Mercury.*

GLASGOW AND AYR RAILWAY.—This undertaking at the terminus here is going far to alter the face of matters in the suburb of Tradeston. A passage for the railway has been cleared from Cook-street, down to the proposed dépôt in Clyde-place, and throughout its entire length a great number of buildings have been removed, under authority of the Act. For the purpose of making the dépôt as ample as possible, the methodist chapel in Bridge-street has been taken down, and other buildings in the neighborhood will speedily follow. The whole of the work, from the canal downwards to the dépôt, will be attended with great expense, in consequence of the necessity that exists for carrying the line over the various streets by which it is crossed. A bridge is forming over West-street, at the canal bridge, from which the line will proceed to a point immediately to the east of Commerce-street, where it enters Tradeston, crossing, in its progress, Cook-street, Wallace-street, Wilson-street, and King-street, on strong iron arches. In the spaces between the above streets, the railway is to proceed over a continuous range of brick arches, about twenty-five of which have already been erected, while others are in progress. These operations are, of course, attended with great labor and expense, but they are going forward in the most satisfactory manner.—*Glasgow Courier.*

MIDLAND COUNTIES RAILWAY.—This railway is now rapidly approaching its completion, and many months will not elapse before this district is in possession of the benefits to be derived from steam communication, and that, too, to all parts of the kingdom. The facilities that it will thus open for an expeditious mode of transit from the town must be sensibly felt by all, in particular by the commercial classes. The metropolis, and the manufacturing districts of Lancashire and Yorkshire, which constitute the most important places of intercourse with Leicester, will all be brought within a journey occupying some five or six hours.—*Leicester Chron.*

CLAY CROSS TUNNEL.—On Wednesday, the 18th of December, the last brick of the Clay Cross Tunnel was laid, on which occasion a silver trowel, bearing a suitable inscription, was presented to the engineer by Mr. Price, contractor for the tunnel. A number of gentlemen afterwards partook of an elegant entertainment, and passed a very pleasant evening together. The first brick of this undertaking was laid about September, 1837, so that it has been little more than two years in completing. The ballast is laid for the rails, and the permanent road will be completed through the tunnel some time next month. The stone fronts are being constructed, and will be finished about the same time.—*Derby Reporter.*

CHELTENHAM AND GREAT WESTERN RAILWAY.—The railway bridge across the Lansdowne-road, at Cheltenham, was opened a few days back, and now forms the "permanent way" to Gloucester and South Wales. The portion of the road extending from the bridge to the proposed station, and the junction within the Gloucester and Birmingham line, which has been so long in a state of progression, it is expected will be proceeded with immediately the centering and other impediments to the thoroughfare under the bridge have been removed.—*Gloucestershire Chronicle.*

FRANCE.—The railway question has been at length appointed for the consideration of the Chambers. The railway commission, however, have not yet made their report, so that it may reasonably be expected that no ultimate measure for forming a grand chain of roads, taking in all the principal towns, will be determined on this session. Something must be done to satisfy the expectations of the public, founded upon the engagements last ses-

sion of M. Dufaure, who appeared as a kind of patron to railway companies. He not only granted them at the time favorable conditions of every kind, but promised still further, and even obtained a loan of five millions for line, the utility of which was questioned. The cavilling at the fares, however, and the refusal by government of permission to the St. Etienne and Lyons company to make an advance in them, hold out little encouragement for future hopes.

FRANCE.—There is a project before the French Chambers for continuing the line from Lille to Courtrai, passing by Turcoing and Roubaix, to join the Belgian lines.

FRANCE.—The *Courrier de Bordeaux* states that operations have been commenced for laying down a line of railway in the commune of Cestas. Workshops have been constructed between the cross of Hins and Pessac. The viaduct between the hills of Haut Brion and l'Essac, which is to be a thousand metres long, and to consist of about a hundred arches, will be commenced forthwith.

THE REVENUE.

The quarterly tables of the revenue, published on Saturday night, present the following returns:—

On the net produce of the revenue for the year ending 5th January, 1840, there is an increase of £824,395; the total income of the year ending 5th January, 1839, having been £44,176,014, while that for the present year amounts to £45,000,409. The last quarter, however, exhibits a deficiency of £342,245—a most disproportionate falling of.

In the comparative table of the income for the corresponding quarters, ending 5th January 1839 and 1840, we find the following items:—

Customs, an increase of	£55,687
Excise, a decrease of	200,789
Stamps, an increase of	65,939
Taxes, a decrease of	1,990
Post-office, a decrease of	14,000
Miscellaneous, decrease	17,297
Imprest and other monies, decrease ..	84,068
Repayment of advances, decrease ..	16,826

making on the whole, in comparing the quarters' income of the two years, a decrease of £213,344.

It will be observed that a material feature of this decrease arises from the falling-off in the Post office receipts, which is stated in the table at only £14,000. It must, however, be remembered that this deficiency has occurred within the space of 23 days, and, therefore, the loss upon the month being calculated at about a fourth more, would make the real monthly deficiency £17,500, or upon the whole quarter £52,500.

NEW POST OFFICE REGULATIONS.

The following official announcements cannot fail to interest our readers, who must be, one and all, concerned in their operation:—

GENERAL POST-OFFICE, Dec. 20, 1839.—In consequence of the great increase of letters containing coin, it has become necessary, in order to prevent the total interruption of the service, to discontinue the system which has hitherto prevailed of entering the addresses of such letters, and taking receipts for them on delivery to the owners.

The practice, therefore, of entering such letters as *money letters* will cease on and after the 1st of January, 1840; after which time, parties having occasion to transmit small sums in cash, are recommended to make use of the Money Order Office, where they will incur no risk; while those who may desire to remit bank notes, or drafts payable to bearer, are requested to cut them in half, sending each half, if possible, by two different posts. In the case of bank notes, or bank post bills being

sent, the numbers, dates, and amounts should be carefully taken.

Money orders for sums under 5*l.* are granted by every post town upon every other post town in the United Kingdom on application at the various offices.—By command,

W. L. MABERY, *Secretary.*

GENERAL POST-OFFICE, 1st Jan., 1840.—Parties having occasion to transmit through the Post packets, which do not contain letters, are requested not to enclose articles which have hard or sharp edges, or which may be of a brittle nature, as in the first case the seals of the letters in the mail bags may be broken and the letters mutilated; while in the second, the articles themselves will probably be injured in the operation of stamping.

Bottles containing liquid should not be transmitted through the Post-office, as they must be broken by the friction of the mail-coaches even if they should escape injury from the stamp, when the most serious consequences to the mails may be experienced, from the addresses, and, in many instances, the writing of the letters being thereby entirely effaced.—By command,

W. L. MABERY, *Secretary.*

The "Treasury Minute" referring to the *New Penny Postage Act*, which came into active operation yesterday, was given in full, in our number of last week.

LITERATURE.

REVIEW OF BOOKS.

Domesticated Animals popularly considered, in reference to their Structure, &c., and to their Influence upon the Progress of Human Society. By Robert Mudie.

The author of this volume is so well known from the number of popular works he has published, that of his talents as a writer we need here say little. He possesses the happy art of writing pleasingly, and well; he is rather discursive, perhaps, but his remarks are, nevertheless, all worth reading. The following description of the Gazelle is graphic, and true to nature:

"A mountain antelope is a beautiful sight; and they who wish to learn the principles and the practice of mechanics in the school of nature cannot, perhaps, have a finer study. The small footing of rock upon which the little elastic animal can stand is perfectly astonishing, such as we would hardly suppose to afford sufficient clutch for the gripe of an eagle, all powerful as that most majestic of birds anchors itself upon the pinnacle, and braves the utmost fury of the tempest. There is no clutching power in the booted feet of the mountain antelope, but the walls of their hoofs are sharp, and almost as hard as flint; their tendons are as chords of steel, and their muscles are almost disembodied motion; such is their energy in proportion to their size. The four feet are brought close together on the point of the rock, as if they formed a disc like that on the under part of those fishes which adhere to the rocks by a pectoral sucker, and find their food in security, despite the turmoil of the rapidly racing waters. So does the mountain antelope poise itself on the pinnacle of the mountain crag, with an instinctive management of the centre of gravity; but yet a management so perfect, that the most prolonged and elaborate study of man cannot come up to it. When the animal wishes to spring, which it can do for many feet, and alight with safety on another craggy point, it bends the joints of its legs pretty equally; but, as the projecting angle of the hind ones is backwards, and that of the fore ones forwards, the bending prepares them for very different portions of the leap which the animal is to

take. The extension of the fore legs, by bringing back the joints which answer to the wrists in man, tends to throw the body upwards, and the instant that this has freed the anterior hoofs from the rock, the whole animal in its hind legs and its back acts like a bended bow, and discharges itself from the tips of the hind hoofs with such velocity, that if it were to impinge upon a lion it would fell him to the ground. Instinct teaches it to suit the exertion to the distance it has to go, of which the same instinct enables it to take measure by the eye, and by this means, when it arrives at the point on which it intends to alight, the momentum of the leap is exhausted, and it alights in safety, and is again instantly balanced. Among the motions of animals, varied and curious as they are, there are not many equal to this, whether in energy, in rapidity, or in certainty. In fact, the whole mechanical process is performed as quick almost as thought; and, although one is in the most favorable situation for viewing it, all that can be seen is the transfer of the bounding animal from crag to crag."

Mr. Mudie's remarks on the "training" of domesticated animals, prove that he is well acquainted with his subject:

"There is, perhaps," says Mr. M., "no animal which may not be, to some extent, tamed in this way. It has been tried with animals of all classes, and, with a few exceptions in some of the smaller species, perhaps the ape tribe are those in which it has been least successful, and they are those which in their structure resemble man the most. Among other reptiles, the toad and the tortoise have been trained to come when called; and fishes, both of the sea and fresh water, have been trained to do the same. We never heard of a tame crab or lobster among the crustacea; but there have been instances of a tame spider among the arachnidæ. We once knew a gentleman who had kept, if keeping it could be called, a tame toad for a number of years. It kennelled in a hole under the stairs which led from the lawn to the hall door; and upon a warm and moist evening, in the dog-days, it would come out when he whistled, and eat a supper of flies from his hand."

We can readily attest the truth of the above observations, knowing a gentleman who, for some years past, has devoted himself to the study of natural history with all the ardor of an enthusiast. He is in possession, at the present moment, of an infinite variety of domestic animals, all of which, by kindness, he has rendered tame beyond belief. He has a collection of fresh-water fish, in particular, which, on hearing the sound of his well-known whistle, will instantly rise to the top of the glass bowl, and take bread from his mouth—evincing, by their gambols, a perfect knowledge of his identity, and, by rubbing their sides against the back of his hand, proving their affection to be fairly won. *Ex uno, disse omnes.*

Mr. Mudie's little volume is deserving our best word, and we think it will meet with many purchasers. It is an appropriate present for youth, and one which cannot be estimated too highly. It is quite as instructive as entertaining, and affords food both for reflection and admiration.

Grant's London Journal, No. I.

We have just been favored with a sight of the first number of this new weekly periodical, and must in justice say, that if this is to be the standard of excellence, Mr. Grant need not be in any fear respecting his "*Journal*" displacing any of the rival publications. Surely he must have been consulting the planets when he penned the following prophetic sentence:—"We do not," says he, "believe our journal will displace a single copy of any of

our contemporaries." This is as candid as it is true. The work is, we should say, a miserable abortion, though every way worthy the talent (!) of the author of the "Great Metropolis."

Paléographie des Classiques Latins.

M. Ernest Panckoucke has just completed this work, which is a fac-simile of the Latin classics, after the most approved specimens in the Paris library. MM. Champollion Figeac, and A. Champollion are the publishers. The purpose of MM. Champollion is to throw light upon what even the generality of Latin scholars are ignorant of, viz., the ages of the ancient MSS., the manner of their discovery, and their condition; and to assign indubitable marks for ascertaining their genuineness and antiquity, by pointing out the variations in the writing and in the embellishments. The book is of a folio size, and each fac-simile occupies a page, to which is subjoined an historical notice. Other MSS. of the author referred to are enumerated, and their places of deposit in France, and elsewhere, are recorded. The collection forms a series of MSS. from the fourth to the sixteenth century, ornamented with designs, illuminations, and emblazoned letters. The fact of its being an authentic and accurate transcript of all the various hands used during the ten centuries preceding the re-introduction of the arts and sciences, and the invention of printing, presents it in an interesting light; but as containing materials for elucidating the history of Roman literature in the middle ages, it is intrinsically valuable to the historian and the man of learning.

The Mediterranean Illustrated.

A French translation of this delightful work has just been published. It contains Engravings of all the principal towns and cities on the shores of the Mediterranean, several pretty Sicilian scenes, and also others on the coasts of Barbary and Calabria, together with Gibraltar, Malta, Palermo, Algiers, &c. M. Pellé has transfused much of the elegance of the original into his translation, and the plates, which are sixty-four in number, are by the best London engravers, after designs by Mr. Leitch, Sir Grenville Temple, and Lieutenant Allen. The author appears to have constantly had recourse for assistance to the labors of Ville Hardouin, and of MM. de Chateaubriand, Lamartine, Michaud, Campbell, &c. The beauty of its embellishments and style are sufficient inducements to invite a perusal, but a still stronger one is the accuracy of its descriptions.

Dictionnaire d'Histoire Naturelle.

This work, which M. Ch. d'Orbigny has been publishing with the assistance of several learned men, (some of them Members of the Institute,) continues successful. It will form, when finished, eight volumes, comprising the matter of from twenty-eight to thirty-two volumes. The uninformed will find it of much service in giving them a quick and clear insight into what they desire to know; and the learned are therein furnished with a repertory to their own and others' stores of knowledge. It is arranged in alphabetical order, and has an atlas annexed. The mechanical part may be taken as a specimen of French workmanship,

being got up with the greatest care, and regardless of expense.

Le Précis de l'Histoire des Français.

This production of M. Sismondi is an excellent elementary work, being a complete abridgment of the history of France. It is stored with facts, and of limited size, conveying abundance of clear information. Never was an author more devoted to his subject, for M. Sismondi has spent no less than 30 years in completing the two octavo volumes, during which time he has read through the chronicles of several kingdoms, their state papers, a mass of private correspondence, memoirs, &c., and has published twenty-four thick octavo volumes as preparatory studies, for the purpose of elucidating the events which are the subject of the *Précis*!

Scènes de la Vie des Peintres.

We have long had our eye upon this magnificent work, appearing, in parts, at Brussels. We are happy to announce its appearance in London in an English garb. The text contains a vast fund of novel information connected with the great masters of the Dutch and Flemish schools, no less interesting to the public in general, than to professed connoisseurs in the fine arts, and to antiquaries. We do not hesitate to affirm, that the lithographic prints are the finest productions, in this style of art, that have ever fallen beneath our notice.

L'Histoire d'Espagne, Vol. IV.

L'Histoire de la Civilisation Grecque. By M. Rosseuw Saint Hilaire.

The professor has been judicious in his selection of the time for presenting these works to the public, for they exhibit him in a light highly becoming to the successor of the learned and venerable M. Lacretelle. Both these subjects, indeed, are unsurpassed for interest and importance; for as we are compelled involuntarily to admire Greece as the mother of civilisation, so Spain, in the time of the Moors, cannot fail to excite in us a deep interest, it being impossible to disconnect it from our ideas of poetry and romance.

It is rumored that the Prussian government has prohibited the teaching of Hegel's doctrines in the universities, and more particularly in that of Halle.

Not fewer than 3,000 copies of the new edition of Victor Hugo's Works have been sold within a month from the date of publication. Not to mention any other merit, it has every thing to recommend it in a mechanical point of view, and is moreover embellished with a portrait of the author and some clever engravings.

FINE ARTS.

THE WORKS OF WATTEAU.

Watteau, perhaps, more than any other painter of intrinsic worth, reflected the characteristics of his age: the mixture of truthful simplicity and courtly airs, of natural grace and artificial elegance, in his pictures, is most remarkable; the artificial predominates, both in his subjects and his treatment of them, but it is endowed with a charm beyond the meretricious manner of the mere fashionist, arising

from a strong picturesque feeling for the beauties of nature, that neither style nor theme could stifle or overlay. Watteau, on the contrary, infused a homely character into his courtly scenes, his being prose-picturesque; his invention was quaint, and fantastic, showing itself in a combination of modes, the rural and the regal. Watteau would have painted the Queen and her ladies of honor playing at dairy-farming within sight of the Petit Trianon to perfection; the courtiers looking like elegant clowns, and the maids milking with an air.

This anomalous and seemingly incongruous admixture of the rustic and the fashionable, not only gives piquancy to Watteau's ornamental designs, but is the very element of their fitness for decorative purposes, where representations of nature require a link of artifice to connect them harmoniously with the furniture. As in architectural ornaments, the modeller translates natural objects into the forms and phraseology of art, and the painter also gives a precise and formal character even to the leaf of a tendril in his decorations, so, in the introduction of pictures as part of the embellishments of a room, a certain degree of artificiality in the treatment of the subjects seems required. It may be rural-fantastical, as in Watteau; ideal-fantastical, as in the classic arabesques of Pompeii and the Vatican; ethical-fantastical, as in the German arabesques; or it may take any shape that human fancy may throw it into—peopling the scenes with boys as genii, with nymphs, satyrs, &c., as in the antique gems, with the china shepherd and shepherdesses of the mantel-piece, or with monsters and chimeras; the principle being, that pure representations of actual nature are unfit for form part of a design of architectural decoration, unless connected in some way with the artificial world into which they are transplanted. This is strikingly exemplified in the alterations made at Versailles by Louis Philippe; the rooms lately lined with pictures of the events of French history not only fatigue the eye by the glare of color, but the paintings, instead of being subordinate as decorations, are principal; it is neither a gallery of pictures, as the Louvre, nor a suite of apartments pictorially embellished. One half of the palace is all gilding and furniture, the other all painted canvass. The one wants the relief of ornament, the other of color.

The name of Watteau is better known than his works. As a decorative artist he enjoys a wholesale reputation, while as a painter of pictures he is not thoroughly appreciated. This may arise from his works being rarely found in public galleries. There is only one in the Louvre, and that seems to puzzle his countrymen so much, that they are disinclined to add any others to their collection. It is not a matter of surprise that our National Gallery should be without a picture by Watteau, though his merits as a colorist are likely to find favor for him in this country, because aristocratic amateurs, when they want to raise a few thousands, send "their Raffaellas, Corregios, and stuff," to John Bull's warehouse, where "the best price is given for old" pictures, and "no questions asked." Watteau's are ornamental furniture, that may be admired without the trouble of thinking: there is nothing to disturb the equanimity of the most vacant mind in his groups of courtly Corydons and masquerading Phyllises, tricked out in the fashion of Louis the Fourteenth for a fancy-ball champêtre at Versailles. Moreover, their market value is estimated by hundreds, not thousands; though, seeing how suddenly Murillo and Velasquez have attained the dignity of four figures in the English price current, we should not be surprised at a similar leap in the article of Watteaus: it is to be hoped, however, that any advance in pecuniary value will be preceded by such an increased appreciation of the qualities of the painter, as may suffice to prevent a repetition of the mistake of the works of Lancret for Watteau.

The Society for the Encouragement of the Fine Arts at Mechlin have given notice of the exhibition, which is to open on the 28th of June, 1840, and to remain open a month. The numerous subscriptions received by the society promise a rich harvest to the artists who intend to exhibit their performances.

VARIETIES.

Literature in France.—MM. J. J. Dubochet and Company, booksellers, Rue de Seine, are on the eve of reprinting Laurent's *History of Napoleon*, illustrated by Horace Vernet. The first edition has just been exhausted. The announcement of a new edition, after disposing of 22,000 copies, is a proof that they are wrong who complain of the neglect of literature of late years. At what period have editions of such magnitude been so rapidly disposed of?

Mines of France.—The number of mines at present worked in France is 520, viz.:

Lead and silver	33
Iron	132
Copper	8
Manganese	8
Zinc	1
Antimony	16
Rock Salt	1
Pit Coal	303
Tin, Cobalt, and Mercury ..	18
	520

These different mines cover 1,318 square leagues of ground, and employ about 30,000 workmen.

French theory reduced to practice by the English.—[A Paris journal, with great naïveté, delivers itself of this opinion, in the following article: it is indeed strictly true, and it is the PRACTICAL tendency of the Englishman's education and habits, that gives his country so vast a superiority over other nations.]

The great repugnance of the learned men of France to translate their labors into the vulgar tongue, is a circumstance of which they have certainly no reason to be proud, as it is sadly disadvantageous to their country. Forty years ago, Coulomb and de Prony demonstrated several theorems relative to carriage wheels; in language suitable, indeed, to the mysterious dignity of geometry, but wholly unintelligible to the million. Their labors therefore, though admired by the learned, were practically without fruit. But when the Englishmen, Edgeworth and Sir Storrsfry, happened to fall in with our great geometricians' discoveries, they stripped them of the sounding and pedantic verbiage in which they were enveloped, and found them to be useful and excellent rules for the construction of wheels. Thus in England every improvement in the mechanism of carriage wheels is universally understood; whilst in France we must be satisfied with a splendid theory only.

All our French savans are acquainted with the doctrines of MM. Petit and Dulong on the action of heat and cold; but no one here thought it worth while to apply them to practice. Not so, however, on the other side of the channel. Without any pretensions to very superior genius, Mr. M'Intosh derived from them his system of hot-air stoves, for which he not only took out a patent in England, but also in France; and it has been in operation for these last ten years, without any one suspecting for a moment that the whole process was discoverable from the principles laid down by two learned French physicians. Many similar instances might be cited, to prove that in France more regard is unfortunately paid to speculative science than to practical art.

No end can justify the sacrifice of a principle; nor was a crime ever necessary in the course of human affairs.—Roscoe's *Lorenzo de Medicis*.

Mlle. L. Puget's *Musical Album*, which has just been published at Paris, contains twelve pieces of much merit. *Le Rêve de Marie*, *Je crois en toi*, and *La Presse des Matelots* are exceedingly pretty. The words are by M. G. Lemoine.

* We confess our ignorance, but cannot recollect to have before heard of this celebrated individual. His name positively confounds us.

SCIENTIFIC MEMORANDA,
AND
NOTES ON ART.

Lectures on Chemistry.—Mr. Semple delivered his concluding lecture on theoretical and experimental chemistry to the members of the Birmingham Atheneum a few evenings since. The subject of the lecture was the alkaline earths, which were distinguished by all forming a white precipitate with the carbonates of the fixed alkalies. None of them occurred in nature uncombined, being always united with an acid, as the carbonic, the sulphuric, and the hydrofluoric. Baryta and strontia occurred but rarely in comparison with lime, which existed in vast abundance in nature; and magnesia was found in large quantities, chiefly in combination with lime. Baryta and strontia were of little importance in the arts; lime, however, was a material of immense utility, and magnesia was a medicine which was highly valued and extensively employed. The lecturer here described with great minuteness the history and properties of these earths, noticing the geological and mineralogical characters of lime, and its uses in chemistry and the arts; he also explained the nature and properties of magnesia, which was first made known about the beginning of the eighteenth century, by a Roman canon, as a cure for all diseases. He exposed it for sale at Rome, and called it *magnesia alba*: it was at that time generally supposed to be a preparation of lime, and little was known concerning its properties till Dr. Black made his celebrated experiments on it in 1755. A whole range of hills consisting of it, was said to exist in India. In concluding his course of lectures, Mr. Semple remarked that he had been enabled to give only a faint outline of the extensive and important science of chemistry, an outline which would require to be filled up by reading and reflection. The object of the lecturer (observed Mr. Semple) should be not merely to amuse his audience by the exhibition of a multitude of experiments which dazzled for the moment and were afterwards obliterated from the memory, but to unfold the principles of his science, to explain those fundamental laws by which the operations of nature were regulated, and to introduce experiments in illustration of those laws, and for no other purpose. He (Mr. Semple) had endeavored to give the lectures which had been just brought to a close a practical tendency, by showing the manner in which chemistry was connected with the arts of life and with the manufactures of this and other countries; and he was happy to learn that the instructions he had given to them were not consigned to oblivion, but that they were followed by the formation of classes in their valuable institution for the further prosecution of the subject matter of the lectures. This was the true method of deriving instruction from public discourses, which, without reading and reflection, were comparatively valueless; but with those auxiliaries, became highly important in stimulating the mind to the acquisition of useful knowledge, and clearing away many of the difficulties which beset the student's path. Whether they regarded chemistry as an exercise for the mind, as a fascinating source of amusement, as intimately connected with many of the arts and manufactures of their great empire, or as tending to throw a flood of light on the kindred sciences of physiology, geology, and mineralogy—in every aspect it presented numerous holds upon the attention of every cultivated mind; and in a town like Birmingham, which owed its greatness to the magnitude and multiplicity of its manufactures, the science of chemistry must find a welcome reception, and its laws be investigated with zeal, assiduity, and success. At the close of Mr. Semple's observations, Mr. Mackay was called upon to preside, when a vote of thanks to Mr. Semple was passed with acclamation by the meeting, for that gentleman's very instructive and interesting course of lectures.

Our scientific readers will be glad to hear that a meeting has recently taken place, for the purpose of

forming a society for the promotion of Microscopical Investigation, the introduction and improvement of the microscope as a scientific instrument, the reading and discussion of papers on new and interesting subjects of microscopical inquiry, the formation of a collection of rare and valuable microscopical objects, and a library of reference. The establishing of such a society has been long under consideration, and in September last a provisional committee was appointed to prepare an outline of a constitution. The meeting was numerously attended; Professor Owen, who was in the chair, was elected president; N. B. Ward, Esq., treasurer; and Dr. A. Farre, secretary. The constitution prepared by the provisional committee was unanimously adopted, and, at the close of the meeting, the president announced that more than fifty gentlemen had enrolled their names as members, and that the future meetings would be held at the rooms of the Horticultural Society.—*Athenaeum*.

The Academy of Sciences, Belles Lettres, and Arts, at Rouen, have subscribed 100 francs towards the monument proposed to be erected to the celebrated Dulong, by the pupils of the Polytechnic School. Dulong was born at Rouen on the 12th of February 1785.

THE DAGUERREOTYPE.

A case of some interest to publishers as a question of law, has just been decided at Paris, relative to the pamphlet explanatory of the Daguerreotype. M. Giraldon claimed the exclusive property of this pamphlet, and brought an action against M. Alphonse Giroux, who had reprinted it without any alteration, for an invasion of his copyright, and laid his damages at 16,000 francs. M. A. Giroux pleaded that M. Giraldon, who had engaged to furnish him with the first 300 copies, and put his name to the whole edition, had broken his engagement by giving copies to M. M. Susse and Lerebours, before he had any at all. He maintained, moreover, that, as the Government had purchased of M. M. Daguerre and Niepce, not only the secret, and practical process of this invention, but also an explanation of the theory, the pamphlet of M. Daguerre, in consequence of his arrangement with the Minister of the Interior, had become public property. M. Daguerre, who attended as a witness, deposed that he never either had, or could have, any intention of selling to M. Giraldon the copyright of a work containing the explanatory description, which, with the rest of the secret, had been bought by the Government; and that he had sold him nothing but the priority of publication. He added, that the Minister of the Interior had authorised him to publish this work on his own account, and to sell the priority of publication, as a recompence for the time he had lost, and the trouble he had taken, in his public lectures on the Quay d'Orsay.

The Tribunal, after hearing Madame Mermilliod on the part of Giraldon, and Madame Paillet, on the part of Giroux, gave the following judgment. It embraces all the questions both of law and fact arising out of this case, which occupied the court for three successive sittings.—“Seeing that in order to constitute an infringement of a copyright there must be a publication of another person's work, contrary to the laws made to protect authors and publishers; seeing that it appears in evidence that by a contract dated 14th June, 1839. Messrs. Daguerre and Niepce sold to the Government the invention mentioned in the proceedings, together with all engravings and descriptions necessary for its illustration, and that it was stipulated that M. Daguerre should make public any future improvements which he might discover; it follows that the description of the Daguerreotype, and the explanation of the apparatus, are public property.

“Seeing that the republication of a pamphlet with engravings similar to those of M. Giraldon's cannot be regarded as the invasion of a copyright;

that it was not Giraldon, but Daguerre, who gave instructions to the engraver Adam for reducing the size of the engravings to adapt them to the pamphlet; and that Proux, brothers, have also published a pamphlet with the same engravings;

“The court is of opinion that the charge brought by Giraldon has not been proved, and it is therefore dismissed with costs.”

[It is hardly conceivable that a publisher should pay consideration merely for the priority of publication of a work, when that priority might not be available even for a day. For if it conferred no copyright, what was the priority worth? Why, just nothing. For, the copyright not existing, any body might pirate the work on the day it appeared, and then what becomes of the priority? By Mr. Daguerre's own admission, he sold his work for a valuable consideration, knowing it to be of no value, and yet in what high sounding terms he boasted of his disinterestedness! “He would not sell his discovery; he gave it to France!”]

PUBLIC EXHIBITIONS.

POLYTECHNIC INSTITUTION.

This institution is now open every evening for the exhibition of a variety of interesting matters, some of which can be much better seen at night. The galvanic light under water, the blowing up of sunken vessels, the effect of lightning on ships, &c., are of this class. The diving-bell affords its accustomed opportunities for a submarine *tête à tête*. The diver exhibits the mode of operating at the bottom of the sea, independent of its aid; and the lectures on optics and chemistry alternately present to our eyes the wonders of the microscope, combustion, &c. The principal models presented to the committee of the Nelson Testimonial, are now displayed on the ground floor, and a colossal group of “The Massacre of the Innocents,” by Mr. Hollins, which we saw a few evenings since in progress of erection behind them, presents an additional feature of a very impressive character. The casts had not been steadily fixed in their places, but we can well imagine from the partial view which we obtained, the striking sensation which will be created when the whole is presented complete to the public gaze.

REPORTS OF SCIENTIFIC MEETINGS.

BOTANICAL SOCIETY.

On the 3d ult., at the ordinary meeting held at the society's rooms, 25, Bartlett's-buildings, Holborn, J. E. Gray, Esq., F.R.S., President, in the chair, a seed vessel, of *lecythis*, from South America, the largest at present observed in Europe, sent by Mr. Wright, was exhibited. It was from the lecythis, the Chairman stated, that the Brazilian nut, so well known in this country, was produced. Specimens of *pucinnea glechomatis*, and another rare fungus, from the neighborhood of Bristol, received from Mr. Stephens, were presented by the president. The first part of a paper, entitled “Notice of indigenous plants observed on the banks of the river Wye, principally in the summer of 1839, by Edwin Lees, Esq., F.L.S.” was then read. Notwithstanding the popularity of the “Wye tour,” Mr. Lees is not aware that much attention has been paid by botanists to the country through which

“Pleas'd Vaga echoes through her winding bounds;” and hence his inducement to enumerate the plants that came under his observation on the banks of the romantic winding Wye. He offers it, however, only by way of prodromus, as it is unlikely, if not impossible, that all the plants of the moorland, meadow, woody, and rocky or littoral portions of this course of the beautiful river, should have fallen under his notice within the cursory inspection of a single summer. His data have been collected

during two wanderings from Rhayader and Llanidloes to the summit of Plinlimmon, whence the Wye takes her rise; an excursion to Whitchurch and Monmouth, in May; a voyage from Ross to Chepstow, in June; a ride from Ross through Monmouth and Tintern, in July; three weeks' residence in Chepstow during the last-named month; a journey from Abergavenny to Ross, in August; and a fortnight's sojourn in Hereford, in August and September.

Nearly two hundred different plants are enumerated by Mr. Lees, and their habitats described with the enthusiasm of one alive to the beauties of nature, revelling in the delight of enchanting scenery. No excursions in England can afford so rich, so varied a treat. Description fails to convey, painting to present, the never-ending change of rock and wood and water. The "Wye tour" lacks the title *foreign* or *continental* to recommend it to the fashionable tourist; but it will be found wanting in nothing by the true lover of nature.

As a curious instance of the power of vitality in the elm (*ulmus campestris*), Mr. Lees mentions the fact of the two off-sets from the root of a felled elm in the churchyard at Ross, having penetrated within the church, and risen up into trees of considerable height. They actually fill up one of the Gothic windows with their frondage, and embower a seat said to be one that belonged to the "Man of Ross," by whom the elms in the churchyard were planted.

THE THEATRES.

"See that the players be well used."—*Hamlet*.
"Nothing extenuate, nor set down aught in malice."—*Othello*.

It is not our wish to disturb the festivities of the season by any ill-timed strictures on the drama; nor will these be looked for, as all persons now attend the theatres with a determination to be pleased, and seat themselves in fondness beside their little ones, to watch the delight visible in their happy faces. Pantomime is now in its element; antic sprites and the genii of fairy-land have it all their own way; and woe be to him who can behold, unmoved, the powers of *Harlequin's* magic wand. The machinery is now become active, and the scenery passive; the consequence is obvious—the transitions are rapid, and the changes savor greatly of the marvellous, adding in no small degree to the reputation of Harlequin.

COVENT GARDEN.—The revival of the *Duenna* on Saturday, was well received, so well, that it bids fair to be repeated. The cast was strong, being as follows:—*Don Jerome*, FARREN; *Don Ferdinand*, HARRISON; *Don Carlos*, Madame VESTRIS; *Isaac Keeley*; *Father Paul*, BARTLEY; *Lay Brother*, MEADOWS; *Clara*, Miss RAINFORTH; and the *Duenna*, Mrs. C. JONES. The acting was throughout excellent, and the songs were well sung. Miss RAINFORTH, in particular, was in splendid voice. Her "*Adieu thou dreary pile*" was brilliant in its execution. HARRISON sang well, but acted infamously. His arms and legs performed the strangest evolutions ever witnessed in a theatre. The new *debutante*, Miss MIDDLETON, who personated *Louisa*, is little more than a walking doll—a mere puppet worked by strings. The house was crowded, and the opera went off well. The pantomime followed: it works better than it did on the first evening, but it is a very sorry affair after those of the two former seasons.

The admirable comedy of *John Bull* has been revived here. The characters are, for the most part, effectively filled, but we must protest against the Honble. Tom Shuffleton, who, as played by Charles MATHEWS, is a subject for unrestrained laughter. The actor quite mistakes the author's meaning.

DRURY LANE.—*Cinderella*, *Der Freischutz*, and *Rob Roy*, have been the principal attractions here. In the two former, Miss LACY still continues to "exhibit," but her attractions have lost much of

their power. Her injudicious friends have done her an irreparable injury by *encoring* her in all her songs, for the public now see through the ruse, and put a stop to the practice. Of *Rob Roy* we cannot say much that is good. Poor little ELTON, as the hero, looked marvellously insignificant, and drew forth many a "broad grin;" still, however, he contrived to hobble through the part. The only striking feature in the opera was the *Helen Macgregor* of Mrs. STANLEY, who performed the character with great energy and effect, and was loudly applauded throughout. The little part of *Martha* was naively filled by Miss PETTIFER. How is it that this young lady is kept so much in the back ground?

In the opera of *Cinderella*, H. PHILLIPS has succeeded LEFFLER in the character of *Baron Pompolino*. The change is greatly for the better, PHILLIPS' voice and style being admirably adapted for the swaggering "descendant from Peter the foolish."

The new interlude, produced on Thursday, called *Cupid's Diplomacy*, was only partially successful. It owes its escape from premature interment to the pretty Miss MONTAGUE, and the lovely FANNY STIRLING, the whimsicality of whose dress, and the archness of whose acting, were alike impressive. We would sketch the plot, but as there is no chance of the piece surviving beyond the week, our space may be better occupied.

HAYMARKET.—Poor WEBSTER ends his winter campaign on Wednesday. He has issued a bill of his "final arrangements," which is, of its kind, the most curious of any document that ever fell under our inspection. We trust his next season will prove more profitable than this has been. He has an excellent company if he knew how to place them. His great error lies in playing old pieces threadbare, and filling his house with 'paper,' to keep up appearances. Wherever this system prevails, it shows something "rotten in the State of Denmark." MACREADY leaves here next week, and takes up his quarters at Drury-lane. HAMMOND stands in need of his services, and we hope the engagement will prove beneficial to both parties.

The MINORS are all doing well—the ADELPHI, SURREY, VICTORIA, SADLER'S WELLS and PAVILION, in particular. The witching smiles, and pretty ankles of *Columbine*, possess charms irresistible for our rising youth, whose taste for the "sublime and beautiful" is evinced at a very early age, Miss MAILE, at the Adelphi, and Miss FAIRBROTHER, at Covent Garden, have more to answer for than they are, perhaps, aware of. How many papas and mamas are there, who will bear out the truth of our remark? Two of our youngsters have been half-witted ever since they saw these young ladies as *Columbines*!

KENSINGTON THEATRE.—On Monday evening, a most extraordinary scene occurred at the Royal Kent Theatre, High-street, Kensington, which occasioned that part of the town to be in a state of considerable excitement throughout the evening. The theatre in question, which is a regularly licensed one, was opened on Boxing-day for the winter season, under the management of a Miss Vyvyan, and the performance continued nightly until Monday last. On that day, "*Jack Sheppard*" was announced in the bills—*Jack Sheppard* by Miss Vyvyan. In the evening, accordingly, the theatre was very respectably filled, and the performance commenced at the usual hour, to the satisfaction and amusement of the audience. At the conclusion of the first act, a drop-scene was as usual displayed, and the audience waited very contentedly for a considerable time, when the usual cries of "Play up, music!" commenced. The members of the orchestra, however, continued *non est*, while the impatience of the audience increased, cries of "Shame, shame," with the accompanying catcalls, rapidly increasing. No person appearing in front of the curtain to apologise, at length some of the audience went round to the stage-door to ascertain the cause, when, finding it open, they entered, and penetrated to the stage, when they discovered that *Jack* and his companions

had all flown, carrying off the treasury with them! The announcement in the body of the theatre of the trick played by the company, occasioned a scene of the greatest disturbance, and in a short time the benches and windows were all broken. A party of police were, however, sent for, who, on their arrival, cleared the theatre, and prevented any further damage being done. The theatre was originally opened by Captain Forbes.

Our old friend and very great favorite, Mrs. GLOVER, has announced her benefit for Thursday next, the night after the theatre closes for the regular season; and we trust that her friends and admirers will rally round, and give her what in truth she deserves—a bumper.

BERLIN.—UNREHEARSED STAGE EFFECT.—In a drama, recently represented on the theatre at Berlin, the head of a victim of the tyrant of the piece was to be presented to him in a dish, on a table, and covered with a napkin. All the preparations were most ingeniously made for this awful spectacle. The head was to be a real one, and the actor, who was to perform the part of the decapitated person, had to thrust his head through an aperture in the back scene, and lay it in the dish, painted so as to make a ghastly appearance. This was done, the tyrant had raised the napkin, and the audience were all becomingly horrified, when the dead man's head replied to the tirade which his murderer was in the act of delivering, by a violent fit of sneezing, which at once turned the scene into a ludicrous farce, and the house rang with laughter. Some wag who had admission behind the scenes, had sprinkled the blood-stained dish with a quantity of snuff!

PARIS.—There has been, perhaps, this season, less novelty than usual in the dramatic and musical world. The repetition of one or two recent, but excellent pieces; the production of a few others tolerably good; some lively concerts, and the successful *debut* of an intelligent and promising cantatrice,—are all that the Parisians have had afforded them for criticism or amusement. *Inez di Castro* is certainly most attractive. The *Italien* is every night crowded to overflowing. The strains of Persiani increase in ravishing sweetness, for she is evidently fascinated with her role, and throws into it all the pathos for which she is everywhere so justly admired. The house is electrified by the brilliant scene between *Alphonso* and *Don Pedro*; when the son, transported with fury, demands of his father that he may die by no hand but his, there is something in the voice and gesture of Rubini that appeals from its very sublimity. Lablache, in his reply, is no less thrilling, from the affecting manner in which he pronounces the following couplet, in presenting him his sword,—

"Ecco e ferro . . . a te spietato,
Vivi mio sangue? di respondi."

If Signor Persiani cannot be placed in the same rank with composers of more powerful talent, his *Inez di Castro* certainly obtains for him a consideration that many men of genius might envy.

The opera itself was retarded by the sudden blindness of Melle. Mathey, at the moment she was about to sustain the character of *Blanche*. She is, however, now happily replaced by Madme. Alberuzzi, whose high reputation is well merited.

A remarkable Concert took place at the Conservatory, on the 29th of last month. For some time past, no better music or instrumentation has been heard in this capital. Reber, a very young composer, has established on this occasion a well-merited character for grace and energy. His expressive chorus of the *Rowers* was enthusiastically applauded.

The French papers speak in raptures of Mdile. Dobré, in the character of *Mililda*, in *William Tell*. Her fine figure and splendid voice are subjects of general remark.

The grand concerts at Tivoli have been brilliantly attended. The artistes engaged to give *éclat* to the performances are of first-rate abilities; among them we must particularise Massart, who

has such command over his violin, that he can make it both laugh and cry at pleasure!

ROUEN.—Mlle. George is playing here with great success. She leaves shortly for Caen.

BRUSSELS.—The loss of Mlle. Jauwreck for the present, the disappearance of Mlle. Nathan, and the ill health of several of the principal "artistes," have rendered the Opera extremely dull and insipid. The Bruxellois who are generally very tame, and submissive to the arbitrary despotism of the management of their principal theatre, were on the 30th excited beyond the ordinary rage of even an English audience. Piece after piece of the most sorry trash had been nightly served up to them for some time, till at last they became utterly wearied, and the reaction caused the management to tremble almost for their personal safety. A better bill of fare was promised, and the production, on the next evening, of the *Barber of Seville*, restored in a great measure the calm temper of the audience. This has been followed up during the week by some well-selected comic operas, and comedies; the public now appear determined to extend the period of their patience, until a still greater and more gratifying change takes place in the prospective arrangements for the forthcoming season.

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SATURDAY, JANUARY 18, 1840.

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ON THE PATENT LAWS OF ENGLAND.

(Concluded from our last.)

CONFIDENTIAL COMMUNICATIONS.

NOVELTY of invention is an essential ingredient of a valid patent, and the knowledge of that fact necessarily induces a rigid secrecy with inventors, until the exclusive right to the new manufacture is secured to them by letters patent. It is impossible, however, that such secrecy can be preserved in every instance; for an invention of magnitude cannot be completed in design, or its practicability tested, without the assistance of workmen. Some discoveries, and especially those produced by chemical operations, may, without difficulty, be retained by the inventor, but in machinery of complex and ponderous construction, the inventor must necessarily incur the risk of allowing others the opportunity of acquiring the principle, if not the precise arrangements of the whole invention for which he intends to obtain the patent right: unless indeed, he be satisfied with a mere *theoretical* examination of its merits, or with the deceptive results of its application by models. Inventors are often pinched in their pecuniary means, and unable to advance the "needful" amount for procuring the exclusive right, by patent, to their inventions; they are, therefore, compelled to submit the inventions to the inspection of persons inclined to afford the required support, in order to satisfy them of their utility, and the advantages to arise from the patent right thereto: confidence thus reposed, under such circumstances, should have the assured conviction, that if the persons to whom a man has ingenuously explained his invention, decline the aid which he has sought, his new manufacture will not be betrayed, or the validity of a future patent impeached by the dishonorable disclosure and public sale, or use of the invention prior to the date and seal of such patent.

Formerly, the evils which resulted from a betrayal of a secret entrusted to workmen or others, were more injurious than at present, for until the act 5 and 6 William IV., cap. 83. passed, a very partial publication of the invention previous to the patent, would render it invalid, and patent property was frequently endangered by the treachery of discarded assistants, or the wilful perjury of nefarious hireling witnesses. The second section of the statute referred to, prescribes relief to a patentee, where in any suit or action it shall be proved, or specially found by the verdict of a jury that he was not the first inventor of the manufacture or some part thereof, by reason of some other person

having invented or used the same or some part of it, before the date of the letters patent. And the judicial committee of the Privy Council must be satisfied that the patentee believed himself to be the first and original inventor, and that such invention or part thereof had *not* been publicly and generally used before the date of the patent.

In Tennant's case, which was an action for an infringement of his patent for a bleaching liquor, (decided *before* the act above mentioned), the utility of the invention, and the general ignorance of bleachers in respect of the process until after the date of the patent, were proved on the trial; and as an answer to the alleged infringement, evidence was given on the part of the defendant by one bleacher, that he had used the same means of preparing his bleaching liquor, five or six years anterior to the date of the patent; though he admitted that he had kept his method a secret from all but two partners, and two servants concerned in preparing it: upon that evidence the patentee was nonsuited.

In an action by Morgan against Seaward for infringement, (*tried since the act.*) it appeared that a Mr. Galloway had invented an improvement in the mode of constructing the paddle-wheels of steam-boats; and, before the date of the patent, (which was the 2nd of July, 1829), Curtis, an engineer, had made two pairs of wheels upon the principle mentioned in the patent, at his own factory, from instructions given him by Galloway, and under an injunction of secrecy, as he was about to take out a patent for the invention. The wheels were completed, and put together at Curtis's factory, but not shown to the view of those who might happen to come there. After remaining a short time, the wheels were taken to pieces, packed in cases, and shipped in the month of April, on board a vessel on the Thames, and sent for the use of the Venice and Trieste Company, of which Morgan was the managing director, and which carried on its transactions abroad, but had shareholders in England. The wheels were paid for by Morgan on behalf of the company, but it did not appear whether they had been sold to him by Curtis or Galloway. Morgan and Galloway employed an attorney, who entered a caveat on the 2nd of March against any other patent for a similar invention, and afterwards solicited the patent in question, which was granted to Galloway, who assigned it to Morgan. The defendant, Seaward, upon these facts, magnanimously (!) contended that the invention was *not new* at the time the patent was taken out, and therefore that its validity could not be maintained: the patent, however, was determined to be good, for the disclosure of the nature of the invention to such a person as the plaintiff, under such circumstances,

must be deemed private and *confidential*; and such a sale, to a company carrying on its transactions abroad, without any gain being derivable therefrom to the patentee, or the plaintiff as the assignee of the patent, was not a use or exercise in England of the mode of construction, in any sense which could be deemed a use by others, or a public use within the meaning of the statute and of the patent.

There can be no doubt, that by reason of the secrecy which inventors are obliged to preserve in their experiments to reduce the *principle* of their inventions to a *practical* state, the public are frequently deprived altogether of most valuable contrivances. The celebrated Mr. Watt, for example, invented and made a machine for executing sculptures, and carved many pieces of sculpture in ivory and alabaster by it, but before he had perfected its construction he died; and, except as the machine explained itself, the principle was never divulged.

(To be Continued.)

CULTIVATION OF COTTON IN BRITISH INDIA.

Several influential gentlemen connected with the Manchester Chamber of Commerce, had an interview, a few days since, with Mr. Brown, an extensive landowner and spice grower in British India, in the district of Malabar, in reference to the capabilities of India for supplying this country with cotton. The observations and opinions of Mr. Brown are worthy of the most serious attention of the government and country at the present moment, that gentleman having devoted, during his long residence in India, much attention to the subject of the growth of cotton, the fiscal arrangements which have for years past operated to check and almost totally destroy its production, and the capabilities of the climate and the soil of immense districts of the British territories, for supplying not only our wants for manufacturing purposes, but of other countries. We are unable to give more than a mere summary of the facts embraced in Mr. Brown's interesting details, in reference to this important subject, which we glean from the *Manchester Guardian* of Saturday last....Mr. Brown commenced by stating that a tract of country as large as Yorkshire—say two millions of acres—would produce all the cotton required by Great Britain, if it were kept in constant cultivation, assuming the produce to be a bag per acre. The cotton of India was an annual, and he would state the reason why it was not imported into this country. About three years ago, in consequence of the great demand

established with benefit to the people at large. To show that the above proposition is in all cases true, let us begin with one of the simplest form. Suppose a nobleman possessing clear landed estates to the value of £100,000, or any other rental per annum, to be empowered to establish a bank, and to issue notes to the amount of one half of the value of the fee simple of his estates, which are at the same time to be made inalienable, as long as any of those notes remain out. This would constitute a bank, with what is considered to be the very best security for the payment of its notes, namely, a landed deposit. Let us take the value of the estates at £2,000,000, and then see how his lordship can get his £1,000,000 of notes into circulation. Go into what market he will, he becomes an additional buyer, and therefore the price of every commodity will be raised by his purchases, or, which is the same thing, the currency will be depreciated, according to the ratio which the paper thus issued bears to the whole of the former circulating medium, and to the circumstance of its being made payable in specie, or otherwise. Hence, if our new banker should put forth all his notes in payment for purchases of land, his million will not quite produce him an addition of £50,000 a-year to his rental, as it ought otherwise, to do, supposing the valuation of his original estate to be exact. But he will probably have, in addition to this, about half a million of deposits lodged in his bank. This will furnish him with about £300,000 in specie, which it will be necessary to keep in hand, if his notes are made payable in that medium, and with £200,000 to lay out in more land, yielding, say about £8,000 a-year, in addition to the produce of the million of notes, and making, together with that produce, an addition of some £52,000 a-year to his original income of £100,000, which latter remains unaffected by the operation, as the rent of land will rise in proportion to the depreciation of the currency. Land is, in this case, the commodity that our supposed banker has obtained by the operation of his trade, and of this he has manifestly got the possession and enjoyment of £1,200,000 worth, which sum is the difference between the aggregate of his issues and deposits, and the amount of bullion or specie retained in his coffers, and out of the profits of this land he has only to provide an office, and to pay a few clerks to exchange and renew his notes and to keep up his circulation, a trifling charge not worth bringing into the account. But then, how long is he to possess this advantage? Why, clearly for ever; because, according to the hypothesis, it is for an indefinite term; and because also, the very foundation upon which the project must have been brought forward and advanced, must have been, that it was to be a permanent benefit, and not an occasional remedy for a temporary evil. The banker is, therefore, never to pay for the land according to the intention of the projectors of the scheme, or in other terms, is to have the full enjoyment of it for ever, and for nothing; and such will, and must be, the operation of the project in favor of the banker, whether any good can come to the rest of the community through it, or not. In the next case, let us imagine that our banker makes safe and prudent purchases of tallow (as some other of our noble speculators are said to have done), or of cotton, hops, indigo, or any other merchandise, with the view of making the profits of a dealer. Here the result is the same, for the banker never pays for the £1,200,000 worth of commodities he has bought. He may keep them as long as he pleases without any demand being made upon his estate; and he may, even if he chooses to live in regal pomp and splendor, consume the whole in one year, and then return to live upon his original estate as before, only keeping up the circulation of his notes, the security for which will remain as good, and therefore as unobjectionable as ever. Thirdly, he may invest his circulation in the public funds, as they are called. The result is still the same; he gets a large sum annually in dividends, but never gives anything but promises for his stock. He may, in the next place, neither buy lands, merchandise, nor public stock, and may,

indeed, be restricted from so doing; but he may confine himself to the discounting of bills of exchange. It makes no difference to him. He has £1,200,000 worth of bills of exchange always in his coffers, which yield him perhaps a little larger, perhaps a little smaller, annual profit than any of the other ways of investment would have done; but still he gives nothing for them but the trouble of making promises to pay, which by the very nature of the projected scheme he is never to be called on to perform, because he is empowered to keep up the full amount of his original circulation; and there is no reason why he should not be able so to do, since the security upon which they are based is of the very best description. In this case, the makers of the bills of exchange may be considered as the banker's agents in the dealing in land, merchandise, or shares of stock, as they purchase only through him, and pay him for the loan of this privilege a per-cent on the amount of business done. But it is not probable that our banker will confine himself exclusively to any one of those ways of dealing with his circulation; he will divide it among them all, as best suits his own interests; but still there is the same abstraction of £1,200,000 of commodities from the hands of industry, of which he obtains the possession and use gratis, solely in consideration of his already possessing an immense income, and being bound over to keep it.

Hitherto, we have considered our banker as a single individual; but the case is not altered if the profits are to be divided among a limited number of partners or a joint stock company. If it can be shown that such an institution is beneficial to the community, all that will be necessary to be done to bring it to bear, will be to club estates together to a large amount, or to raise a joint fund to purchase them with. Then, the title deeds of these estates being lodged with the government, or the land being in any way secured from alienation or mortgage, the legislature may empower the shareholders to establish a bank, with liberty to issue notes secured on the said estates, to the amount of one half, or any other competent part thereof. The shareholders would be equally capable of appointing managers with our supposed nobleman banker, and could divide the rents of their security estate, and the profit of the privilege of getting a large addition to it for nothing, among themselves, as easily as any nobleman might among the members of his family.

The quarterly return of a bank, on a scale such as we have described, might at the end of a year after its establishment, supposing it to have divided only its profits and the rents of its security estates, (corresponding with the annuities paid by government on the Bank of England stock) run thus—

Securities, viz.

Inalienable estates	2,000,000
Disposable ditto, mortgages, bills of exchange, shares, &c., &c.....	1,200,000
Bullion and specie	300,000
	£3,500,000
Circulation	1,000,000
Deposits	500,000
	£1,500,000

This exhibits a balance of £2,000,000 in favor of the bank, which is the assumed value of its original capital, as it ought to be under the circumstances.

The Bank of England returns, for the 7th of this month, stand thus:

Securities	22,913,000
Bullion	3,454,000
	£26,367,000
Circulation.....	16,366,000
Deposits.....	7,136,000
	£23,502,000

This statement shows a balance of only £2,865,000 in favor of the bank, from whence it is clear that it must have dipped deeply into its capital which originally exceeded £11,000,000.—

W. H.

EXPIRED PATENTS.

A LIST OF PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING JANUARY 18, 1840.

ENGLAND.

HENRY HOULDsworth, Manchester, cotton-spinner, improvements in machinery for giving the taking up or winding on motion to spools or bobbins, and tubes, or other instruments on which the roving or thread is roving, spinning, and twisting machines, Jan. 16.

BENJAMIN NEWMARCH, Cheltenham, an improved method of exploding fire-arms, Jan. 16.

JOHN ROTHWELL, Manchester, tape manufacturer, improved heald or harness for weaving purposes, Jan. 16.

HENRY ANTHONY KOYMANS, Warnford-court, Throgmorton-street, London, merchant, improvements in the construction and use of apparatus and works for inland navigation, Jan. 16.

ON THE PUBLICATION OF SPECIFICATIONS.

We give insertion to the following letter, with much pleasure, as we wish to combat every objection made by our correspondents, fairly, impartially, and frankly. The gentleman on whom will devolve the duty of replying to it, is, at the present moment, abroad; we have little doubt, however, that we shall hear from him on the matter, in time, perhaps, for an answer in our Paper of next week. In the meantime, we freely admit that the question agitated by our correspondent is open to discussion, and one which interests inventors and the public, in the highest degree. We promise our correspondent to give the subject our most serious attention, and conscientiously to pursue the course, with reference to the publication of specifications, which we deem to be most conformable to the true interests of inventors.

(To the Editor of the "Inventors' Advocate.")

SIR,—I am a warm friend to the *Inventors' Advocate*. I consider it a most useful publication, and I have supported it as much as possible; but from its first commencement I have been deeply annoyed, to see in it the specifications of English patents, printed a few days after they are enrolled. In doing this, your paper, in my opinion, is neither the *Inventor's Advocate*, nor the *Inventor's friend*, but his bitterest enemy. One reason for publishing the specifications, is, of course, to make your readers generally aware of what is progressing in the inventive world, and if you could give this information without interfering with, and deeply injuring private property, I should feel, as one of the reading public, indebted to you for a class of intelligence not attainable in any other cheap periodical. But the publication of these specifications being a deep injury to private property, I regret to see them, and should have long since written to you my complaints and objections, but that I had hoped some abler pen would have handled the subject. I have heard it stated that your publication of specifications is not so much to provide information, as to prevent parties from procuring specifications from the Enrollment Office, and getting the inventions patented in

oreign countries, for the benefit of these parties so purloining the inventions. That this purloining is practicable, and is done, has been alleged; and to put a stop to the evil, the specifications are printed by the *Inventors' Advocate*, and thereby a purloiner is prevented from procuring a valid patent in foreign countries. If this latter be really the reason why the specifications are published in your paper, nothing can be, in my opinion, more futile, and the reason, I should respectfully say, was based in ignorance of the situation of such Inventors generally as have progressed to the extent of securing an English patent.

You must well know, Sir, that an English patent for any good invention is probably the most valuable patent of any patents for the same invention which might be taken out in Europe. All British inventors aim at first securing an English patent, and foreigners frequently pass over their own countries as regards inventions, and first come to England to secure patents here. You must equally well know that nineteen out of twenty English patents taken out, are obtained by inventors who are either very poor themselves, or who may be assisted by friends, or speculators, not willing to embark more money than will secure an English patent, until the invention patented has been tried on a commercial scale. You must also well know that, frequently, although a patent has been sealed, yet, by reason of patents previously sealed not being specified, it is necessary for the inventor to keep back experiments and certain open and public trials of his invention, until all the specifications of patents of previous date, having any affinity to his inventions, shall have been filed. The consequence of this is, that his own specification runs to maturity before he is able to exhibit his invention on a commercial scale, and until exhibited successfully on that scale, he is generally unable to move a single inch towards finding the money for securing Scotch or Irish patents, or any foreign patents; and until he finds the money, he cannot proceed. It is useless to talk to him about delay and neglect—it is useless to keep the threat over his head that his specification will be published of his English patent before he has secured any others, unless he proceed immediately to secure them; for he cannot move without money. By necessity or by accident, therefore, most inventors reach the specifications of their English patents before it is in their power to move a step in getting the foreign patents. If the result of this is to give a facility to purloiners to steal from the Enrollment Office, this is much to be regretted: it is the case no doubt, but still there is so much of barefaced robbery about such a transaction, that it is not often committed, and if it be, still the inventors have a chance of making some terms with the purloiners. Then the inventors, also, have the further chance that they are able to be the first to send abroad specifications and drawings, contemporaneously with the enrollment of the English patent; and without going to the expense of securing foreign patents, they may yet take a description of precautionary measures abroad, which would obstruct purloiners in their progress. Doubtless purloining prevails, but, as I have tried to explain, it is an evil which can be moderated or abated. It is not death to an inventor, altogether, as regards foreign patents; it may wholly or partially lose him one or two patents, it can seldom lose him all the foreign patents together, which would be an unexampled robbery, and where purloining may be most feared to take effect, precautions and preventives may partially be used. But once publish the specification, and then the Inventor's property in foreign patents is gone altogether. He does not lose one or two, he does not run the chance of losing one or two, but at one blow he loses all. Can this be humanity or kindness to an inventor? Would it be, either, for the *Inventors' Advocate* to say to an inventor—"Sir, You have enrolled your English specification, I know you have not any money to take out foreign patents, but still, I tell you, take them out or they may be purloined, or one or two of them may be purloined, and rather than you should run this chance, and although you may escape wholly

from any purloining, even for six or twelve months, still I, the *Inventors' Advocate*, who want to see you make as much money as you can by your foreign patents, intend to deprive you from Saturday next, of the power of procuring a single foreign patent, for I shall publish your specification!" If to this the inventor replies, "I have not any money yet, I shall get some soon, and then I will take out the foreign patents, and I must run my chance of purloining, and at the worst I may lose but one or two foreign patents,"—the reply of the *Inventors' Advocate*, if I understand rightly, would be "I cannot help your being without money, and it is my opinion besides, that it is better to deprive you at a blow of all your foreign patents, and that immediately, than let you run the chance of one or two being stolen from you within the next twelve months."

I assure you, I do most deeply feel that you inflict a most cruel injury on inventors' property, by this publication of specifications, especially now that foreign patents are becoming daily more valuable; or I should not have addressed you at such length; and I am not writing merely on the theory alone, for I know a practical instance of this:—An invention was patented in May last, and specified in November. The invention was obliged to be kept a secret almost to the last, on account of other patents for similar inventions having been obtained, of which patents the specifications were not due nor enrolled. Of the invention in question, the specification at last fell due and was filed; application, under your advertisement, was made to the patent agency connected with the *Inventors' Advocate* as to taking out patents for abroad, and having received the terms, the inventor was striving to meet the expenses of the foreign patents. While on the eve of receiving the money, you print the very specification of the invention, regarding which you have been thus professionally applied to, in order to secure the foreign patents, and you at once destroy the inventor's property—that inventor being at the time *your own client*, under your public advertisement!

I am sure you will feel that I do not state any of these circumstances offensively; I am dealing with facts, and I bring them home to you strongly, in the hope that you will not only abandon the practice of printing specifications yourself, but that you will become a warm advocate for urging upon all other scientific periodicals to abandon printing specifications—until they are at least twelve months old.

I am, Sir,
Your obedient Servant,
J. D.
London, 17th Jan., 1840.

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED FROM JANUARY 1ST, TO JUNE 30TH, 1835.

N. B. Those Patents that have been also secured in Scotland and Ireland are indicated by * and † before the names of British Patentees (see p. 52.)

(For the year 1836, see page 259, vol. 1.)

Air-beds, Cushions, &c., June 4, Hancock, T.
Axletrees,—see Wheels, H. P. S.
Axe-grease, &c., April 14, Booth, H.
Axe, revolving,—see Wheel, J. J.
Axletrees and Shafts, April 4, Hardy, J.
Beds and Mattresses, Jan. 31, Cook, B. and J.
Bedsteads for Invalids, Jan. 15, Cherry, J.
Boats, tracking or towing, April 14, Boydell, J.
Boilers for motive power, Mar. 11, Hale, W.
Bobbin-net, lace, ornamental, Feb. 12, Alcock, T.
Bobbin-net, lace, ornamental, June 26, Crofts, W.
Bobbin-net, lace, Feb. 27, Pedder, J.
Boxes,—see Chests, safety, C. C.
Buttons for clothes, Feb. 16, Burrell, S.
Carriages,—see Railway, method of suspending, B. T. F.

Carriages propelled by animal or other power, Feb. 25, Aitken, W.
Carriages, transporting,—see Railways, P. J.
Carriages, stopping,—see Wheels, H. P. S.
Chests and boxes, safety, May 13, Chubb, C.
China,—see Ornamenting, E. G.
Cocks or taps for fluids, Feb. 25, Hallett, J. H.
Composition for saving oil and soap in woollen manufactures, April 22, Byerley, Sir J.
Composition used as soap, April 3, Fenton, J.
Cushions,—see Air-beds, H. T.
Cutting and shaping wood, Jan. 29, Dodd, J.
Cutting wood, &c., Jan. 27, Gateley, J.
Diving and working under water, and inspecting from above objects below, Jan 31, Bethell, J.
Diving machine, June 22, Fraser, J. W.
Drags for carriages, May 9, Simpson, W.
Drawings,—see Manuscripts, D. T.
Dyeing, Mar. 11, Hendrik, Herman.
Engravings, etchings, &c., produced on metallic plates, May 13, Valois, A. H. J. F.
Fermentation,—see Saccharine, S. J. J. C.
Fibrous or textile plants, preparing, to be used in place of flax, &c., Feb. 25, Newton, W.
Fire-arms,—see Guns, E. J.
Floors in buildings, laying, Feb. 16, Hendry, J.
Gas apparatus, May 19, Dumoulin, A.
Gas and fluid regulator, June 22, Carter, E.
Gas-making, Mar. 25, Brunton, J.
Gas-meters and generators, June 2, Malam, J.
Gas regulator, April 9, Bacon, H. F.
Goods and passengers, conveying, by land or water, also in steam-engines, Mar. 6, Church, W.
Grease,—see Axe, B. H.
Guns, fire-arms, &c., May 9, Egg, J.
Guns or muskets, April 28, Somerville, J.
Guns, fire-arms, &c., April 30, Dodds, J.
Heat transmitted to substances, Mar. 11, Sylvester, J.
Heckling machine, Feb. 24, Kay, J.
Heddles or healds, Mar. 25, Anderson, D.
Hemp dressing, &c., Jan. 15, Shanks, A.
Horse-shoes, April 14, Stocker, A.
Iron, malleable, May 13, Schafnautl, C.
Lace-making, May 13, Copestate, W.
Lace-making, April 3, Nunn, H. W.
Letter-press printing tools, Mar. 25, Houstoun, W.
Letter-press printing, Feb. 12, Norris, E.
Letter-press printing, Feb. 12, Hill, R.
Locks, March 18, Hill, R.
Manuscripts, writings, and drawings, obtaining duplicates of, May 13, Dunkin, T.
Mattresses,—see Beds, C. B. and J.
Masts,—see Timber, R. T.
Metals,—see Planing, W. J.
Metallic air and water stopper, April 17, Parker, S.
Metallic plates,—see Engravings, V. A. H.
Milk,—see Preserving, N. W.
Mould used in making paper, Mar. 4, Prince, J.
Nail-making, Feb. 25, Prosser, R.
Nail-making, Feb. 16, Slotum, S.
Oils, obtaining certain, March 18, Wood, H. W.
Ornamenting china, glass, &c., April 14, Embrey, G.
Paddle and water-wheels, Feb. 9, Leeming, J.
Paddle and water-wheels, Feb. 9, Halsted, J.
Paper,—see Mould, P. J.
Parasols,—see Umbrellas, B. J.
Pens, penholders, and supplying ink to pens, &c.
Feb. 9, Cleveland, C.
Pianofortes, May 13, Fischer, P. F.
Pianofortes, Jan. 13, Stewart, J.
Pianofortes, Mar. 2, Wolf, R.
Pianofortes, Feb. 27, Danchell, F. L. H.
Planing and cutting metals, June 11, Whitworth, J.
Preserving animal milk, March 11, Newton, W.
Printing machine cylinder, May 13, Buchanan, J.
Printing calicos, &c., June 4, Woodcroft, B.
Printing machines surface, May 30, Losh, J.
Printing machine, Mar. 18, Smith, A.
Printing silk, cotton, &c., Jan. 27, Budd, J.
Printing machines, April 9, Berry, M.
Propelling machine, self-acting, March 31, Chapeaurouge, F.

Pumps, medical, for conveying fluids into and withdrawing them from the stomach of animals, June 2, Nye, J.
 Railways, May 5, Reynolds, J.
 Railways, Jan. 22, Day, J.
 Railways, and transporting carriages from one level to another, Feb. 16, Price, J.
 Railway carriages, &c., Mar. 4, Birgin, T. F.
 Railway and other carriages, method of suspending and adjusting the bodies of, May 27, Birgin, T. F.
 Raising sunken vessels, April 23, Kemp, W.
 Rotary steam-engines, April 8, Berry, M.
 Saccharine, vinous, and acetous fermentation, Mar. 9, Sheridan, J. J. C.
 Ships,—see Standing rigging, S. A.
 Smelting argentiferous ores, June 22, Michell, J.
 Soap,—see Composition, F. J.
 Soap-making, June 4, Leman, J.
 Soap and Oil,—see Composition, B. Sir J.
 Soda, sulphate of, June 4, Phillips, R.
 Spinning, &c., wool, &c., May 27, Bodmer, J. G.
 Spinning machine, April 14, Whitworth, J.
 Standing rigging for ships &c., Jan. 12, Smith, A.
 Steam machinery, June 2, Wilkinson, W.
 Steam-engines, &c., March 28, Humphreys, F.
 Steam-carriages, March 11, Bacon, J. B.
 Steam, generating, April 23, M'Curdy, J.
 Steam-boilers, April 28, Rickard, C. W. R.
 Steam-engines,—see Goods, &c., C. W.
 Steam-engines, Feb. 27, Beale, J. T.
 Steam-engines, Feb. 25, Aldous, J.
 Steam-engines, Jan. 27, Morgan, W.
 Stone, facing and dressing certain kinds of, Mar. 18, Hunter, J.
 Table, expanding, Mar. 11, Jupe, R.
 Tanning hides and skins, May 20, Patterson, W.
 Taps,—see Cocks, H. J. H.
 Tea-kettles,—see Urns, W. W. E.
 Textile plants,—see Fibrous, N. W.
 Timber, joining, for masts, &c. Feb. 6, Roberts, T.
 Trusses, medical, April 3, Gillespie, R.
 Type-founding, Jan. 17, Houston, W.
 Umbrellas and Parasols, Mar. 25, Barker, J.
 Urns for tea, &c., Jan. 22, Tucker, J. J.
 Urns and tea-kettles, Jan. 27, Wright, W. E.
 Vessels,—see Raising, K. W.
 Warp machinery, Jan. 22, Whiteley, T.
 Water-closets, May 13, Ody, J.
 Water, objects below, seen from above,—see Diving, B. J.
 Waterproof fabrics, April 28, Potter, W. S.
 Wheels, axletrees, and boxes, also for stopping carriages, Feb. 25, Hynes, P. S.
 Wheel, metallic safety, and revolving axle, April 14, Ingledew, J.
 Wheels for carriages, Mar. 13, Adams, W. B.
 Wood, cutting, April 28, Ruthven, J.
 Wood,—see Cutting, G. J.
 Wool, preparing, April 25, Earnshaw, R.
 Wool, combing, &c., April 3, Rawson, H.
 Woollen cloths, &c., dressing, Mar. 25, Weekes, W.
 Woollen cloths, &c., dressing, Feb. 25, Davis, W.

BRITISH PATENTEES.

AN ALPHABETICAL LIST OF INDIVIDUALS WHO HAVE TAKEN OUT PATENTS IN ENGLAND, FROM JAN. 1. TO JUNE 30, 1835.

N.B. In the following list, the * before the name indicates that the Patent is also taken out in Scotland.

The † indicates that the Patent is also taken out in Ireland.

Adams, William B., Wheels for carriages, March 13.
 * Aitken, William, Carriages propelled by animal or other power, Feb. 25.
 * Alcock, Thomas, Ornamental bobbin net lace, Feb. 12.
 * Aldous, James, Steam-engines, Feb. 25.
 * Anderson, David, Heddles or healds, Mar. 25.

* Bacon, Hugh F., Gas regulator, April 9.
 Bacon, Joseph B., Steam-carriages, Mar. 11.
 Barker, Joseph, Umbrellas and parasols, Mar. 25.
 * Boale, Joseph T., Steam-engines, Feb. 27.
 * Bergin, Thomas F., Railway and other carriages, March 4.
 Bergin, Thomas F., method of suspending and adjusting the bodies of railway and other carriages, May 27.
 * Berrie, James,—see Anderson, David.
 Berry, Miles, Rotary steam-engines, April 8.
 Berry, Miles, Printing machines, April 9.
 Bethell, John, Diving and working under water, and inspecting from above objects below, Jan. 31.
 * Bodmer, John G., Spinning, &c., wool, &c., May 27.
 Booth, Henry Axle-grease, &c., April 14.
 * Boydell, James, Tracking or towing boats, April 14.
 Brunton, John, Gas-making, Mar. 25.
 * Buchanan, John, Printing-machine, May 13.
 Budd, John, Printing silk, cotton, &c., Jan. 27.
 * Burrell, Samuel, Buttons for clothes, Feb. 16.
 * Byerley, Sir John, Composition for saving oil and soap in woollen manufactures, April 22.
 Carter, Elias, Gas and fluid regulator, June 22.
 * Chapeaurouge, Philip A., Self-acting propelling machine, Mar. 31.
 Cherry, James, Bedsteads for invalids, Jan. 15.
 Chubb, Charles, Safety chests and boxes, May 13.
 Church, William, Conveying goods and passengers by land or water, also in steam-engines, March 6.
 Cleveland, Charles, Pens, penholders, and supplying ink to pens, &c., Feb. 9.
 Cook, Benjamin and Joseph, Beds and mattresses, Jan. 31.
 Copestate, William, Making lace, May 13.
 * Crofts, William, Bobbin-net-lace, &c., June 26.
 Danchell, Frederick L. H., Pianofortes, Feb. 27.
 Davis, William, Dressing woollen cloths, &c., Feb. 25.
 * Day, John, Railways, Jan. 22.
 Dodds, Isaac, Guns or firearms, &c., April 30.
 Dodd, Isaac, Cutting and shaping wood, Jan. 29.
 * Donisthorpe, George E.,—see Rawson, Henry.
 * Dumoulin, Alexis, Gas apparatus, May 19.
 * Dunkin, Thomas, Obtaining duplicate copies of manuscripts, writings, and drawings, May 13.
 Dunington, Henry,—see Copestate, William.
 Earnshaw, Ruben, Preparing wool, April 25.
 Egg, Joseph, Gun, firearms, &c., May 9.
 Embrey, Godwin, Ornamenting china, &c., April 14.
 Fenton, John, Composition used as soap, April 3.
 Fischer, Pierre F., Pianofortes, May 13.
 * Fraser, John W., Diving machine, June 22.
 Gatley, Joseph, Cutting wood, &c., Jan. 27.
 Gibbs, Joseph,—see Gatley, Joseph.
 Gillespie, Robert, Trusses, medical, April 3.
 * Hale, William, Boilers for motive power, March 11.
 Hallett, John H., Cocks or taps for fluids, Feb. 25.
 Halstead, James, Paddle and water-wheels, Feb. 9.
 * Hancock, Thomas, Air-beds, cushions, &c., June 4.
 Hardy, James, Axletrees and shafts, April 4.
 Hendriks, Herman, Dyeing, Mar. 11.
 Hendry, James, Laying floors in buildings, Feb. 16.
 * Hill, Rowland, Letter-press printing, Feb. 12.
 Hill, Richard, Locks, Mar. 18.
 Houston, William, Type-founding, Jan. 17.
 Houston, William, Letter-press printing tools, March 25.
 * Humphreys, Francis, Steam-engines, &c., March 28.
 * Hunter, James, Facing and dressing certain kinds of stone, March 18.
 * Hynes, Patrick S., Wheels, axletrees, and boxes, also for stopping carriages, Feb. 25.
 Ingledew, John, Metallic safety wheel and revolving axle, April 14.
 * Jupe, Robert, Expanding table, Mar. 11.
 * Kay, James, Heckling machine, Feb. 24.
 * Kemp, William, Raising sunken vessels, April 23.
 Leeming, James, Paddle and water-wheels, Feb. 9.
 Leman, James, Soap-making, June 4.
 Lever, John,—see Pedder, James.
 * Losh, John, Surface printing machines, May 30.
 M'Curdy, John, Generating steam, April 23.
 * Malam, John, Gas-meters and generators, June 2.
 Michell, James, Smelting argentiferous ores, June 22.
 * Morgan, William, Steam-engines, Jan. 27.
 Newton, William, preserving animal milk, Mar. 11.
 * Newton, William, preparing fibrous or textile plants, to be used in place of flax, &c., Feb. 25.
 Norris, Edwin, Letter-press printing, Feb. 12.
 * Nunn, Henry W., Lace-making, April 3.
 Ody, Joseph, Pump for conveying fluid into and withdrawing them from animal bodies, June 2.
 Ody, John, Water-closets, May 13.
 Parker, Samuel, Metallic air and water-stop, April 14.
 * Patterson, William, Tanning hides and skins, May 20.
 Pedder, James, Bobbin-net-lace, Feb. 27.
 * Phillips, Richard, Sulphate of soda, June 4.
 * Potter, William S., Waterproofing fabrics, April 28.
 Price, Joseph, Railways, and transporting carriages from one level to another, Feb. 16.
 Prince, John, Mould used in making paper, March 4.
 Prosser, Richard, Nail-making, Feb. 25.
 * Rawson, Henry, Combing wool, &c., April 3.
 * Reynolds, John, Railways, May 5.
 Rickard, Charles W. R., Steam-boilers, April 28.
 Roberts, Thomas, Joining timber for masts, &c., Feb. 6.
 * Ruthven, John, Cutting wood, April 28.
 * Schafhaulth, Charles, Malleable iron, May 13.
 * Shanks, Alexander, Dressing hemp, &c., Jan. 15.
 Sheridan, John J. C., Saccharine, vinous, and acetous fermentation, March 9.
 Simpson, William, Safety drag for carriages, May 9.
 * Slocum, Samuel, Nail-making, Feb. 16.
 Smith, Andrew, Printing machine, Mar. 18.
 * Smith, Andrew, Standing rigging for ships, &c., Jan. 12.
 * Somerville, John, Guns or muskets, April 28.
 * Stevenson, James,—see Ruthven, John.
 Stewart, James, Pianofortes, Jan. 15.
 Stocker, Alexander, Horse-shoes, April 14.
 Streets, John,—see Whiteley, Thomas.
 * Sylvester, John, Heat transferred to substances, March 11.
 Tucker, John J., Urns for tea, &c., Jan. 22.
 * Valois, Alphonse H. J. F., producing engravings, etchings &c., on metallic plates, May 13.
 Weekes, William, dressing woollen cloths, &c., March 25.
 Whiteley, Thomas, Warp machinery, Jan. 22.
 Whitworth, Joseph, Planing and cutting metals, June 11.
 * Whitworth, Joseph, Spinning machine, April 14.
 * Wilkinson, William, Steam-machinery, June 2.
 Wolf, Robert, Pianofortes, March 2.
 Wood, Henry W., Obtaining certain oils, Mar. 18.
 Woodcroft, Bennett, Printing calicoes, &c., June 4.
 * Wright, William E., Urns and tea-kettles, Jan. 27.

In the archives of Rouen, a discovery has been made of a register which contains thirty-three pages in Corneille's handwriting. They consist of an account of receipts and disbursements made by him, while treasurer in Saint Savior's parish, and were written in the same year in which he composed the tragedy of Nicomedes.

The emperor of Austria has recently founded an institute for Literature, and the Arts and Sciences, at Milan, for the benefit of Lombardy; and another at Vienna, for the Venetian states.

FOREIGN PATENTS.—BELGIUM.

LIST OF PATENTS RECENTLY GRANTED BY THE BELGIAN GOVERNMENT.

(Continued from No. 23.)

Prisse, F., Son, and Company, residing at St. Josse-ten-Noode, Vieille Chansée de Schaerbeck, No. 270, a patent of importation for 10 years, for an apparatus, called by the inventor "portable granary," (*grenier mobile*), invented by Vallery, for the preservation of grain, Dec. 12, 1839.

N. B. This patent is granted on the following conditions, and will be declared null and void if the patentee do not strictly comply with it.

The patentee is bound to authorise all the manufacturers of the country, who may require it of him, to set up and work the machine in question; and he is to give them, for that purpose, all the necessary information, in consideration of a fair indemnity, to be agreed upon between the parties, or, in case of dispute, to be fixed by arbitration.

Deblaive, Albert, soap-manufacturer, residing at Mons, a patent of invention for 15 years, for new processes calculated to simplify the preparation and manufacture of soaps, Dec. 30, 1839.

Sax, Adolphe, the younger, manufacturer of musical instruments, residing at Brussels, rue Notre-Dame-aux-Neiges, No. 70, a patent of invention for 10 years, for an apparatus for tuning pianos instantaneously to the proper diapason, Dec. 30, 1839.

Janmarte, Richard, stove-manufacturer and locksmith, residing at Louvain, rue de Malines, No. 76, a patent of invention for 10 years, for economical stoves, Dec. 29, 1839.

Delstanche, P., proprietor, residing at Marbais, a patent of invention and improvement for 10 years, for sundry systems of ploughs, for a cylindrical plough-share, and for an improved coulter, Dec. 30, 1839.

Le Gendre, professor, residing at Brussels, rue de Lakeu, No. 51, a patent of invention for 15 years, for a new method of instantaneously depriving night-soil and other such substances of offensive smell, Jan. 3, 1840.

FOREIGN CORRESPONDENCE.

FRANCE.

IMPROVEMENT IN THE CONSTRUCTION OF LOCOMOTIVES.

Locomotives, the chefs d'œuvre of mechanical science, are still susceptible of great improvement in regard to solidity. The best of them scarcely run seven or eight days without requiring to be repaired; and this circumstance not only compels railroad companies to have a great number of locomotives beyond what are actually in use, but also exposes passengers to the dangers caused by engines exploding. That this evil admitted of an easy remedy, appears from the very simple invention of M. Ch. Sthethelin, an engineer, at Bitswiller, (Haut-Rhin) who has lately introduced one of the most valuable improvements that has been made for some time in locomotive steam engines.

* For the meaning of the terms *importation* and *invention* as applied to patents taken out in Belgium, the reader is referred to No. 5, Vol. I. of the "INVENTORES' ADVOCATE," page 69, in which will be found our remarks on the defects of the existing law.

One of the great desiderata, hitherto, in all steam engines has been to prevent the play and derangement of the tubes by fixing them more firmly in the plates. This has been effected by M. Ch. Sthethelin in a very complete and judicious manner. The tubes, after they are let into the plates, are kept in their places by means of a washer, but as the pressure is very variable, there is considerable difficulty in fastening them to the plates with sufficient firmness. M. Sthethelin's plan is to improve this washer by strengthening it with an additional rim on the upper as well as the under side of the plate, and also by inserting it as a screw, instead of driving it, so that by means of a winch or lever the tube can be pressed against the plate, and all possibility of its striking prevented. To provide against the risk of accidents from any sudden change of temperature, it has been thought best to make the tubes a little convex, *un peu bombés*.

By this simple and ingenious plan, the plates will remain secure, the tubes will have no room to play, and the chance of the machinery being jarred and deranged, will be much lessened; the difficulty of repairs, when necessary, will no longer exist, stoppages on the lines will be of rare occurrence, and, lastly, the railroad companies may reduce considerably the number of their locomotives.

But this is not all. Latterly the directors, as a precautionary measure, have insisted upon a previous trial of all locomotives that were to be employed upon the railroads; and they could discover no better method of trying them than doubling the ordinary degree of pressure at which they work. These trials, according to the reports of those who witnessed them, often did serious injury to the locomotives, and frequently forced out the flat plates at each end of the boiler. With M. Sthethelin's washers, these trials will be equally satisfactory, and much less formidable, for the tubes and the plates being firmly connected together by them, can resist the maximum pressure.

This valuable improvement will astonish those who are ever maintaining the superiority of the English over the French in mechanical inventions.—*Moniteur Industriel*.

STATISTICS.—PARIS.

One thousand and thirteen bankruptcies have been reported to the Tribunal of Commerce of the Seine, between the 1st January 1839, and the 1st January 1840; viz.—

58 in January; 68 in February; 79 in March; 84 in April; 86 in May; 98 in June; 91 in July; 107 in August; 84 in September; 193 in October; 79 in November; and 76 in December.

The total amount for which the several bankrupts failed, exceeds 60 millions of francs.

SAVINGS BANKS.

The following table gives an accurate view of the operations of the Paris Savings Banks, from 1st January 1839 to 1st January 1840.

Months.	Deposits.	Payments.
January	3,540,107	2,005,000
February	2,449,097	2,662,500
March	2,202,617	2,935,500
April	2,161,203	2,338,000
May	2,177,133	1,749,000
June	2,370,799	1,800,000
July	2,623,274	2,325,500
August	2,453,466	1,667,000
September	2,116,498	1,944,000
October	2,734,786	2,465,000
November	2,231,893	1,651,000
December	2,289,854	2,463,000
	29,350,727	26,005,500

From this table, it appears, that the sums deposited exceed the sums taken out, by 3,345,227 frs.

BRUSSELS.

STATISTICS.—BRUSSELS.

POPULATION OF BRUSSELS INTRA MUROS.

The following table is compiled from the Monthly Statistical reports, entered in the city registers. It exhibits the changes that have taken place in the population of the capital of Belgium for the last 10 years, from 1st January, 1830, to 1st January, 1840.

Years.	Population on the 1st January.		Deaths.	Marriages.	Divorces.
	Males.	Females.			
1830	98,279	1,994	2,127	1,901	800
1831	98,279	2,057	1,965	1,883	944
1832	93,574	1,851	1,854	2,344	668
1833	93,574	2,058	1,931	2,092	866
1834	93,623	2,167	2,063	1,921	1,092
1835	102,702	2,226	2,028	2,017	1,491
1836	103,388	2,421	2,157	2,014	1,886
1837	104,161	2,221	2,125	2,120	2,084
1838	104,509	2,366	2,310	2,342	1,206
1839	104,713	2,247	2,272	1,994	1,951
1840	105,287	1,132 44
	21,608	20,699	20,804	20,298	10,047

The details furnished by this table are interesting to the citizen. The augmentation in the population of the city of Brussels, since 1830, appears to be about 7,000 souls. It must be remarked, however, that the number placed against the year 1840 is only an approximation, which there is every reason to believe will be exceeded by the real number. The augmentation would doubtless have been more considerable, had it not been for the fatal visitation which destroyed a great number of the inhabitants of the capital in 1832 and 1833; and we find, accordingly, that in the former year, the deaths are more than the births by 972, and in the latter by 288.

During these ten years, from 1830 to 1840, the deaths have been more numerous than the births in the four following years, viz. 1830, 1832, 1833, and 1838. In the last, in which there was a great mortality among children, there is an excess only of 28. In the year 1830, the year of the revolution, the number of births was less than the number of deaths by 40. The increase of the number of deaths in 1830 applies, as might be expected, wholly to males; of whom, in that year, 2,127 died, and only 1,994 were born, leaving a difference of 133.

The total number of births, of both sexes, during the period in question was 42,307; the total number of deaths, 41,032; giving an excess of births of 1,275. The number of marriages was 10,047; of divorces, 44. There were fewest births and fewest marriages in the year 1832, when the population was exposed to the dreadful ravages of the cholera. The greatest number of marriages and divorces was in 1838. In 1834 there was no divorce.

BRUSSELS.

ROYAL ACADEMY.

FRENCH AND BELGIAN STANDARDS OF WEIGHTS AND MEASURES.—The minister of the interior and of foreign affairs communicated to the Academy a report from the committee of inquiry, appointed by a royal ordinance of August 22, 1837, for the purpose of ascertaining the conformity of the Belgian weights and measures with those of France.

STATISTICS OF PUBLIC LIBRARIES IN BELGIUM COMPARED WITH THOSE OF GERMANY.—Last year M. A. Voisin presented to the Academy a statistical report of the public libraries of the country. The

researches, which he has been making for a work which he is about to publish, a "History of the Libraries of Belgium," have enabled him to correct some parts of this report, and to extend the information contained in it, to the literary and scientific collections of several large institutions; which, though not open to the public, are accessible to men of letters. Taking the amount of the population from the statistical documents published at Brussels, in 1836, by the minister of the interior, he shows the relative numbers of the inhabitants of each city, and of the books at their disposal.

The researches which he has made in the principal public libraries of Germany, likewise show the superiority of that country in literary treasures, as compared with our own.

Thus whilst in Belgium the average number of books, to which the public have free access, is 96 volumes for every 100 inhabitants; in Germany it is 372. Our libraries, when compared to those in the departments of France, are still inferior; without taking into account those of Paris; where the Royal Library alone (consisting of 700,000 vols.) contains one-third more printed volumes than all the public libraries of Belgium, in which altogether there are only 481,222. In Germany, many cities, containing only 10,000 souls and under, have considerable libraries. It is very different in Belgium.

ON LIGHTING BRUSSELS WITH GAS.

We have in former numbers noticed the new contract for lighting Brussels with gas. The new company, of which Messrs. Barlow and Co. form a part, have encountered unexpected difficulties, having to maintain a law-suit against the old company, under the firm of Meuss, Wouters, and Co., who have just distributed a paper signed by their professional advisers, in which it is contended that M. Demot cannot act as an arbitrator; that the resolution of the municipal authorities, on the 29th February, is null and void; and that there must be a revision of their claim to have included in the revocation of the contract the apparatus for lighting private houses, which is wholly independent of that for lighting streets and public places; and, lastly, that the valuation of both, must necessarily include the value of the labor as well as the materials.

At the end of the paper is a table of the annual lighting of private houses, extracted from the company's books, which is curious as showing the progressive increase of the use of gas:

Yrs.	Number of gas lights.						
1819	72	1825	1644	1830	2739	1835	3542
1820	350	1826	1829	1831	2614	1836	3675
1821	378	1827	1952	1832	2657	1837	4048
1822	632	1828	2234	1833	2931	1838	4368
1823	945	1829	2470	1834	3217	1839	4724
1824	1332						

The proportion between the population of the cities, and the number of volumes to which they can have free access, is as follows:

Libraries.	Number of printed volumes.	Population.	Number of volumes to every 100 inhabitants.
1. Brussels, (2 Libs.)	170,000	102,802	165
2. Louvain	100,000	24,342	410
3. Liege	62,000	59,810	103
4. Tournay	53,922	86,564	64
5. Ghent	27,800	29,180	95
6. Namur	15,000	19,921	75
7. Antwerp	14,000	75,362	18
8. Mons	12,500	23,081	54
9. Courtrai	12,000	18,858	63
10. Bruges	10,000	42,421	23
11. Ypres	2,000	14,000	13
Total ..	481,222	Total .. 497,341	Average.. 96

The relative proportion between the population and some of the principal libraries in Germany, according to the most authentic information, is as follows:

Libraries.	Number of printed volumes.	Population.	Number of volumes to every 100 inhabitants.
1. Munich	540,000	60,000	900
2. Berlin	300,000	192,000	156
3. Stuttgart	300,000	60,000	500
4. Vienna	260,000	270,000	105
5. Wolfenbüttel	280,000	6,600	4,242
6. Dresden	260,000	50,000	520
7. Pötingen	250,000	10,000	2,500
8. Bonn	200,000	10,600	1,886
9. Breslau	200,000	70,000	285
10. Jena	135,000	10,132	1,332
11. Fribourg	100,000	10,000	1,000
12. Heidelberg	100,000	12,318	812
13. Carlshafen	90,000	17,000	588
14. Frankfurt	50,000	50,000	100
15. Wiesbaden	40,000	10,000	400
Total ..	3,125,000	Total .. 838,650	Average.. 372

RAILWAY INTELLIGENCE,
DOMESTIC AND FOREIGN.

LEAMINGTON RAILWAY.—All who sincerely desire to witness the increasing prosperity of Leamington will be glad to learn that every prospect and reasonable expectation now exists of the bill for a branch Railway from Coventry being speedily obtained, and the operations for its completion being forthwith commenced. For ourselves, we can foresee no tenable objection to the contemplated measure, nor any just ground for contrary feeling to that of our fashionable neighbors at Cheltenham, for the benefit of which town the formation of a railroad has already made considerable progress, the same being intended to join the Great Western at one point, and the Birmingham railway at the other. It will not be for our advantage to yield in this respect to the importance or energies of a rival watering place, within so trifling a distance. Our correspondent, who recently pronounced a contrary opinion, widely mistook the probable expenses, estimating them at rather more than a third beyond those which have been stated by experienced parties well informed on the subject, and the best judges in such a calculation. We rejoice also to find, that men of wealth, intelligence, and character, are connected with the present undertaking, securing by so strong a guarantee the certainty of such being carried into effect, with benefit and credit to the royal town of Leamington Spa.—*Leamington Chronicle*.

DEPUTATION TO THE DIRECTORS OF THE MAN-

CHESTER AND BIRMINGHAM RAILWAY.—We are authorised to say that these gentlemen have had an interview with the board of directors, at which they laid before them the substance of what passed at the public meeting held at Stoke. The directors frankly avowed their engagement to make the line to Crewe, there to join the Grand Junction, and to employ all their means in that work, until it should be accomplished, which they expected would be in two years. In the mean time, they wished it to be understood, that they had not abandoned the Potteries line; but that nothing could be done in the present difficult state of the money market, and that there was little prospect of its being done at all on the plan now laid down, without great modifications. They therefore declined to give any pledges, or to be parties to any arrangements, until they saw their way clear, and the means at their command. Eventually it was suggested by one of the directors that the Extension line might probably be brought from Stone onwards to the Potteries, and that a line might be taken from this terminus to Crewe, thereby giving that district an outlet north and south. A communication, it is expected, will be made to the Grand Junction and Extension companies, to bring the subject under consideration, so as to lead to a further meeting.—*Staffordshire Advertiser*.

On Monday evening last, Sir F. Smith, Royal Engineers, Colonel Cunningham, Royal Engineers, and Professor Barlow, the commissioners to whom the government has referred the competing projects for the best and most direct railway communication between London and Dublin, arrived in this city. We understand they had inspected the whole of the line from Holyhead to Chester, recommended by Mr. George Stephenson. The latter gentleman also arrived here, and had an interview with the commissioners. They were also visited by one of the leading promoters of the Porthdynllaen and Shrewsbury line. They left here on Tuesday. Of course their decision cannot be known until their reports appear.—*Chester Chronicle*.

HULL AND SELBY RAILWAY.—We understand that Mr. Walker, the company's chief engineer, has been in Hull this week, and after examining the various works on the line, has reported very favorably as to the progress which is being made in them; the bridges over the rivers Ouse and Derwent are in an advanced state of forwardness, and will both be completed in a few weeks; nearly the whole of the line is ballasted, and several miles of the permanent single way, on longitudinal bearers and cross sleepers, are already laid: large quantities of these are being constantly forwarded to the various portions of the line. The dépôt and other buildings at Selby are in a very advanced state; this is also the case with those at the Hull terminus; and, although the past season has been a most unfavorable one for all railway works, it is still hoped that this undertaking will be ready to be opened for the whole length about Midsummer next. With respect to finances, we understand that the whole of the amount to be taken upon loan has been obtained without advertising, and the last call, notwithstanding the pressure upon the money market, has been remarkably well paid. We may congratulate our townsmen especially, and the inhabitants of the manufacturing districts of Yorkshire and Lancashire generally, on the prospect of speedily being enabled, by means of the Hull and Selby Railway, (connected as it is with the Leeds and Selby, the York and North Midland Counties, Manchester and Leeds, Manchester and Liverpool, Grand Junction, and London and Birmingham Railways,) to travel by this cheap, safe, and expeditious mode to all the principal towns in the kingdom. We are happy to learn that the price of shares in the Hull and Selby Railway is rapidly advancing in the market, and that before the opening of the line, as above stated, they are likely to be at par.—*Eastern Counties Herald*.

EDINBURGH AND GLASGOW RAILWAY.—We are glad to learn from a correspondent who lately visited the Edinburgh and Glasgow Railway works,

now in progress, especially those through the Almond Valley, about eight miles from Edinburgh, under contract by Messrs. John Gibb and Son, on which there is one bridge of thirty-six arches, of fifty feet span each, besides numerous smaller bridges, extensive earth-cuttings, &c., that these gentlemen contemplate employing on these works, early in the spring, a vast number of masons, quarriers, earth-workers, and wagon-drivers. We have no doubt that this will be good news to many, especially as trade in the manufacturing districts is in such a depressed state.—*Aberdeen Journal*.

EDINBURGH, LEITH, AND NEWHAVEN RAILWAY.—An act was obtained in 1836 for making this railway. It will commence at the east end of Princes-street Gardens, and proceed by a tunnel under Saint Andrew-street, &c., to the foot of Scotland-street, and thence to Trinity Pier, in nearly a straight line. The whole length of the railway to Trinity will be 13,000 feet, or about 2½ miles; that of the tunnel about 2,800 feet. More than one-third of this line has been contracted for, and operations are proceeding on several portions of the line. It was originally intended to make a branch to the harbour and docks of Leith, but by an act passed in 1839 this branch is abandoned. The capital is £100,000.—*Oliver and Boyd's New Edinburgh Almanack for 1840*.

BELGIUM.—A few days since, the train which leaves Brussels in the morning for Liege, was detained two hours on the road, in consequence of the engine being provided with bad fuel. An engine was despatched from Tирлемонт to ascertain the cause of the delay, and to conduct the train to the last-named town.

The omnibuses, we learn, did not arrive till half-past two, a.m., owing to the detention of the train on the road.

RAILWAY SYSTEM OF GREAT BRITAIN.

The recent appearance of M. Nothomb's report on the Railway System of Belgium, to which we have now repeatedly drawn the attention of our readers, must, doubtless, have struck every one, as it struck us, with the contrast which such a document indicates between the respective public foundations on which the railway systems of that country and of this are established; *there*, public authority originating, executing, superintending all;—*here*, private enterprise allowed to do everything; and drawing towards it public legislative regard only when grown to such gigantic importance as to threaten to jostle out of the course, and at length extinguish, all more primitive competing interests.

Thus founded on contrasting principles, the two systems contrast with each other throughout,—in initiatory perfectness, and consequent summary success; in harmony of general management, and of general obedience to improving impulses thence resulting; and, which is not less characteristic, in the facility for rendering public general accounts on the one hand, and the almost insuperable obstacles to any such explanatory general expositions on the other. Hence, as regards this latter point, the fact of so important a statistical document as that of M. Nothomb, appearing with the seal of authority under one of the departments of state; while, on our part, all our information on the same subject is partial, fragmental, isolated,—to be gleaned only with great labor and difficulty, through innumerable heterogeneous publications; and when so gleaned, lacking that official authentication, which can alone, however valuable it may otherwise be, render it unexceptionable as a work of reference.

We propose, in a short series of papers, to supply such a work in the meantime, until the legislature shall adopt measures for ensuring annually an official report, to which, not only all who pay attention to the subject may thenceforth confidently refer, but which may also be made a text-book and

guide to subsequent legislation. The necessity of speedily effecting this object, has at length been fully recognised by the House of Commons, which last year appointed a committee to inquire into various matters connected with railways; and from which committee it received, among others, the following recommendations:—

1st. That, to protect the public from the evils to be dreaded from the selfishness and monopolising tendencies of private incorporated companies, a board should be formed, under authority of parliament, consisting of the president and vice-president of the Board of Trade, assisted by one or more engineer officers of rank and experience, to supervise all the arrangements and details of railroad formation and management.

2d. That no new railroad should be opened for the conveyance of passengers, until an inspection was made under the sanction of the said board, who, if dissatisfied with it in any respect, should have the power of adopting legal proceedings on behalf of the public. The board, however, to possess no authority to lay down rules for the government of railroad companies; but merely to be invested with power to control "those regulations to which the public may be subjected by the exercise of the extensive powers now vested in such companies by their respective acts; nor should any byc-laws have the force of law, without the previous sanction of this board."

3d. That the board also should be made a tribunal of arbitration, in all matters of dispute between connecting lines.

There can be little doubt that these suggestions will speedily be acted on by the legislature; and when that takes place, we trust to see our country vie with Belgium, and every other, in the ability and value of her annual official expositions of the state and progress of this great branch of industry. Meanwhile, however, the unbridged chaos between us and that state of orderly arrangement, is most uncomfortable to contemplate; and, therefore, roused by the report of M. Nothomb, and the desire to benefit the public, we propose, as already said, to make the "INVENTORS' ADVOCATE" the repository of as much methodised information on the subject, as may form a source of authentic reference during the interval. To this end, we shall confine ourselves for all leading facts to official documents only, of which a greater number have been made accessible to us than we at first ventured to expect; and the basis thus laid being sound, it will itself afford the means of testing the accuracy of our illustrative reasoning and details.

How strikingly different from that of M. Nothomb, is the way in which we must commence our labors! He cites the initiative taken by his State, in the form of a public law, passed in a particular year; upon which, like Minerva leaping armed from the head of Jupiter, out rushed at once the railway system upon the rich and level plains of Belgium—trim, and perfect, and ready, to the full extent of mechanical and scientific knowledge then attained; whereas, we must point to the future giant while yet only "mewling and puking in the nurse's arms" of private enterprise amongst us; running its head against posts, and scorching its fingers in fires innumerable, and playing all the other unconscious faults and follies that precede and practically establish the power of enlightened self-guidance! And yet, without this dark infantile period on our part, could the splendidly mature vision that has burst so instantaneously on Belgium, have ever had existence? It is thus that the inceptive experiments of one nation evolve, in time, the ripe fruit of wisdom both for itself and others,—and that we are taught to admire the mysterious ways by which Providence regulates the great process of human advancement, by originating the governing movements calculated to that end, at the very points, and among the very circumstances, where they are most sure to be continuous, and eventually triumphant. For where is the other country, whose freedom from war and intestine commotions,—or, if free from these, whose command of private capital and re-

sources, could have enabled it in the same manner to have wrought out so magnificent an experiment? Honor and praise, therefore, to our beloved

"Gem, set in the silver sea,"

for all the mixture of blunders and triumphs she has with such heroic perseverance struggled through! On some shoulder must have been laid the Herculean burden; and that she, for the good of all, has borne it in the way exemplified, merits for her the praise and gratitude of all, instead of disparaging criticisms on what she has attained to, compared with others who started at the eleventh hour, with all the advantages she had won for them during the previous ten.

Who does not feel constrained to admit at once the justice of this ascription of praise, on hearing such voices as the following rise from out the experimental past, bearing witness to the toils, and trials, and discouragements struggled with and overcome, before results had sufficiently established that plane of general knowledge, on which enterprise may now every where start on careers understood with certainty as to their issues and minutest incidents beforehand? The principal manager of the Liverpool and Manchester Railway, in writing to a friend, several years after the opening of that great work, says,—"Some explanation seems requisite of the ground of my expectation that a more economical working will obtain in future undertakings. In the original formation of the road, imperfect rails, insufficient sleepers, and inadequate draining, have been, and still are, the cause of heavy and constant expenditure. Gradually these defects are in course of being remedied; but time and money are indispensable in this process, and the work of transition from wrong to right is yet far from being accomplished; further time will be needed, and further sums must be expended. New railways will have a great advantage, in this respect, in the formation of the road, in the mechanism of the engines, in the construction of the carriages, in every thing which constitutes the working of a railway. They will start at a point which we have not yet reached, or only in solitary instances."

This is but one example of the kind of language held in describing all similar undertakings down to about the same period; and while it inspires sympathy for those struggling on through so many disadvantages, it also begets a feeling of pride and joy, at the gradual emergence of a great public discovery into full practical acknowledgment and adaptation.

The Liverpool and Manchester Railway, though thus illustratively noticed, was by no means the earliest of those important undertakings in this country. It was begun only in 1826; while the first of our public railways dates so early as 1801. Long previous to even the latter period, specimens, so to speak, of the invention, had made their appearance at many of our collieries, in the form of smooth tracks for the wagons, used in carrying both between pit-mouth and heap, and thence to vessels brought to load at contiguous harbours; some of which kinds of railway are nearly two centuries old.

The possibility of carrying out the principle into use in general traffic, had of course occurred to many superior minds, and led to various local experiments and speculations, during the long period mentioned; but none of these assumed a public legal existence until 1801, in which year THE SURREY IRON RAILWAY COMPANY received an act of incorporation, "for making and maintaining a railway from the town of Wandsworth to the town of Croydon, with a collateral branch into the town of Mitcham, and a navigable communication between the River Thames and the said railway, at Wandsworth;"—length, about nine miles; cost, about £50,000. This was the first public railway in Great Britain, and had the honor of experimentally pointing the way to all that have since followed it.

In our next, we shall enumerate and trace the history of these.

(To be Continued).

COLOSSEUM.—Under the able superintendence which advanced the attractiveness of the Adelaide Gallery and the Polytechnic Institution, the Colosseum, for the ensuing season, is about to take up a higher position than it has hitherto held in the rank of popular amusements. In addition to the stupendous panorama, covering 46,000 square feet of canvas, and to the beautiful conservatories, containing all varieties of tropical plants, the saloon of arts will afford objects worthy the attention of visitors. Working models of machinery, specimens of the arts, scientific apparatus, new inventions, &c., &c., are to be arranged in the spacious saloon, together with the casts and busts already there. To the latter have been recently added one of Homer, admirably executed by Hollins, and also one by the same artist of the Hon. Mrs. Norton.

"Devote."—If there be two patents for the same invention, the second patent may be annulled. If L. only has a patent, and the invention was publicly and generally used prior to the date thereof, it may be repealed on that ground.

"A Subscriber from the Commencement."—This gentleman's favor came to hand at the eleventh hour. His queries shall be fully answered in our next.

We have so heavy a pressure of matter this week, that several articles are unavoidably omitted; among them, are our DRAMATIC ARTICLE on the ENGLISH THEATRES, and the conclusion of M. NOTBOMBE'S REPORT ON BELGIAN RAILROADS, &c. &c.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSO CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated on our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
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It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 O'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsmen, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 6, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

Erratum.—In our last, at page 44, 33 lines from the bottom of the third column, for "7½" read "7¾"; also, in the same column, 10 lines from the bottom, for "Wisthead," read "Whistled."

"R. V. H."—The pressure of steam on the piston of a steam-engine, expressed in weight, depends upon the area of the piston, and the rapidity of the stroke. The best answer to our correspondent's question is, to give him the rule for calculating steam power:—a one-horse power is reckoned to be equivalent to 3,300 lbs. lifted one foot in one minute.

"P. D. Z."—Your query is answered in our article on the Patent Laws, in the present number.

"Assignee of Patent."—No; the patentee cannot set up in defence that the patent is invalid—he is stopped in law from so doing.

"R. Smithson."—Not after the patent has expired.

"T. Watson."—The caveat merely entitles you to a notice of any application for a patent for a similar invention. You will have no protection until your patent is sealed.



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, JANUARY 25, 1840.

Since the opening of Parliament, the House of Commons has been chiefly occupied in discussing a question of privilege, but notices have nevertheless been given on the part of Government which indicate their intention of taking the Trade and Manufactures of the country into serious consideration. The measure of most importance is the appointment of a Select Committee to inquire into the state of Communication by Railway. Mr. LABOUCHERE has also given notice that, on the 28th inst., he shall move for leave to bring in a bill to regulate Navigation by Steam, and a bill for the Formation of Inland Bonding Warehouses. Mr. E. TENNENT has brought in a bill to extend the Copyright of Designs in woven Fabrics from three months to twelve, which has



been read a first time, and ordered for a second reading on the 31st inst.

We wish again to impress upon our readers, that we do not consider ourselves answerable for some of the opinions expressed by our "Correspondents." We give their communications insertion, with a view to have them replied to if the arguments they contain are found to be untenable.

WANT OF ENCOURAGEMENT TO MECHANICAL INVENTIONS.

It is an extraordinary circumstance, that the government of a country like ours, which depends so essentially for its prosperity on manufacturing industry, should present so little encouragement for the prosecution of investigations and experiments that might lead to the improvement of its trade and manufactures. Even in the absence of direct encouragement to stimulate industry, it might be expected that, when some ingenious inventor had struggled successfully with the difficulties that surrounded him, and perfected a discovery that had benefited his country and opened a new source of national wealth, he would surely be distinguished by public honors, and remunerated with national munificence. But it is not so. He is allowed to pursue his course to the grave without honors or rewards, and when he is "gathered to his fathers" no public monument of his country's gratitude marks the spot where his bones lie buried. When a foreigner visits England, and views the public monuments erected to honor the memories of the great men who have spread a lustre on their country, he sees statues of Generals, of naval heroes, of statesmen, and of poets, but how few can he find in honor of men of science, and where shall he look for public monuments of those who have conferred lasting benefits on the world by their mechanical genius?

The Royal Society, we believe, is the only institution founded by Royal authority for the promotion of science and the arts, and it was, even at the time of its foundation by Charles II., and it has been still more so of late years, devoted rather to the promotion of speculative science, than to mechanical inventions. The Society of Arts was founded in the middle of the last century, by means of the unwearyed exertions of an ingenious mechanic, Mr. Shipley, who felt the want of some stimulus of the

kind, and that institution has, to the extent of its means, been of great service to the arts and manufactures. Numerous other institutions and societies, for the encouragement of different branches of science and the arts, have lately been established, which cannot fail to produce most beneficial effects, by exciting public attention to scientific objects; but whilst the importance of such a stimulus has thus been admitted, the Government has remained inactive.

Is it fitting, we ask, that in this great manufacturing country the task of stimulating invention and discovery should depend on individual exertion alone? Whilst foreign nations are straining every nerve to improve their manufactures, should our government look listlessly on, and make no effort to encourage ingenious inventors, and foster latent talent? In a country so distinguished for enterprise, skill, and perseverance, individual exertion will, indeed, accomplish much, but, by the aid of government, important investigations and experiments might be prosecuted, which few individuals have the means or the opportunity of undertaking. Many, very many, there are without the means of working out the brilliant ideas that their inventive faculties suggest, and which, if properly encouraged, might be productive of advantageous results to their country; but, from the want of such a fostering hand, their talent is crushed in the bud, and becomes lost to the community.

We trust the session of Parliament that has just commenced will not be permitted to close without having its attention drawn to this important subject. Commissioners might be appointed, consisting of gentlemen well versed in different departments of science, to examine the merits of inventions and discoveries submitted to their consideration, with power to supply the means for perfecting those inventions that appeared practicable and likely to be of public benefit, and to recommend Parliamentary grants for useful discoveries in science and the arts. It should also be within the province of the Commissioners to offer handsome rewards for inventions and discoveries on subjects that seem susceptible of improvement or involved in doubt.

The appointment of such a Commission would, we feel persuaded, be of inestimable value to the country. The whole annual expense, including the rewards and cost of experiments, need not exceed £30,000, a sum that is a mere trifle for an object of national importance, and the amount would, we confidently

expect, be returned to the country a hundred fold.

But it may be said, the government at present does afford all inventors ample encouragement by offering them the protection of a patent. Yes; after the inventor has, by patient perseverance, by the exercise of much ingenuity, with great cost, and constant anxiety, brought his invention to perfection, the government takes from him a good round sum for fees and stamps, to protect his property from plunder. But does it keep that engagement? No! When the poor patentee finds his patent right infringed, and applies to the government to defend him, he is thrown on his own resources, and finds, that the protection he purchased so dearly is merely the privilege of defending himself!

The iniquities of the patent law, however, deserve a separate consideration, which we shall take an early opportunity of bestowing on them. The subject is only introduced here to show that the government, so far from affording encouragement to inventors, actually throws impediments in their way, by charging enormously for a protection which, when claimed, is found to be fictitious.

ILLUSIONS OF THE DIORAMA EXPLAINED.

There are, we believe, few persons in the metropolis, or at least few who have any taste for pictorial exhibitions, who have not visited the Diorama, in the Regent's Park, and wondered at the apparently magical changes that occur in the paintings as the spectators gaze on them. The mystery observed in the exhibition, the peculiar construction of the room, its darkness and revolving machinery, assist in giving the impression that there are some hidden agents at work to effect the metamorphoses we behold. They depend, however, on no pantomime tricks, but on the ingenious application of light and shade, on a principle perfectly simple, and which may be reduced to practice, on a small scale, by any artist, at very little expense.

The mode by which these interesting illusions are produced is this:—The scene to be represented is painted on fine linen, or silk, stretched tightly on a frame; if the size be small, fine writing-paper will answer equally well. Some of the objects are painted on the back of the stretched linen, and some on the side facing the spectators; and by a contrivance for throwing the light on the back or front of the picture, at the will of the exhibitor, it becomes either a transparency (in which

all the figures painted at the back are visible), or it is a common painting, seen by reflected light alone; or both lights may be used, and thus give the combined effect of transmitted and reflected lights.

Let us, for instance, suppose the *Church of Santa Croce*, which was recently exhibited, to be the view in question. When first disclosed, the interior of the church was seen by daylight, the light streaming in from the upper windows and throwing the shadows of the pillars, and of the monumental statues broadly against the pavement and the walls. Near the altar was a number of empty chairs, and the candles near the altar, and in the aisles, were unlighted. The dusk of evening gradually obscured the different objects, until the darkness of night prevailed. After a short interval the church became illuminated; the candles burnt dimly at first, but they soon put forth a blaze of light, and showed the previously empty chairs occupied with people, assembled at midnight mass.

It may readily be conceived that the darkness was occasioned by gradually closing the curtains over the windows which threw light on that side of the painting fronting the spectators. In the night scene, the painting was a *transparency*; the light was then excluded from the front, and thrown solely on the back of the painting, where the figures in the chairs were painted and were consequently only visible by transmitted light. In those points where the candles were apparently burning, the light was obstructed only by the thin medium of the translucent ground, while all the other parts were rendered more or less opaque, until they merged into darkness. The strong light which the candles appeared to give in the midnight scene was an instructive illustration of the effect of contrast in painting, for the spots which had the brightness of flame, would not—were the light equally diffused over the whole surface—have appeared more bright than does a thin sheet of paper when held up to the light.

In the view of the *Village of Alagna*, which was exhibited in the Diorama the year before last, the opening scene was a transparency. From the window of a smith's cottage in the foreground the light of the forge issued, its bright red rays glaring through the air and on the ground, whilst the smoke from the chimney burst forth in rapidly moving volumes. In the middle-distance the Village of Alagna was seen by moonlight, situated at the feet of stupendous snow-clad mountains, and lights from the windows of the cottages were reflected

from the water of a tranquil lake, on the margin of which the village is placed. After looking at the scene some time, the light from the forge was extinguished, the wind was heard rushing through the gorges of the mountains, indicating a mountain storm; the light of the moon became obscured, and, suddenly, the lights in the cottages disappeared. The dawn then gradually gleamed on the mountain tops, the mists from the valley were dispersed, and the only remaining trace of the Village of Alagna was the spire of the church, peeping above the snow, with which the cottages were supposed to have been overwhelmed.

The effects which we have described are produced by painting, on the *back* of the picture, the red glare from the forge and the cottages, which the transmitted light brings to view. When the light behind is excluded, its gradual admission on the front of the picture gives the appearances at early dawn, and of advancing day, and those objects only that are painted on the front are visible. An additional and very beautiful effect may be produced by throwing the light behind on the mountains at the same time as the light on the front, when, if they be properly tinted at the back, they present a perfect resemblance to the tinting of nature, as the hues seem to depend upon the varying reflections from the clouds. The lights from the forge and from the cottages are extinguished by interposing small shades between those parts of the picture and the light, and the appearance of rising smoke is very naturally imitated by painting smoke on a small gauze wheel, which is kept revolving behind. The light is confined in the transparent view to those parts intended to be seen by placing substances more or less opaque on the other parts.

It was on returning from witnessing the *Village of Alagna* that the idea occurred to the writer of this article how the illusion was occasioned. To ascertain whether he had discovered the principle of the Diorama effects, he painted, from recollection, a view of the scene and its adjuncts, and by means of a small wooden box, which enabled him to throw the light on the back or on the front at pleasure, he was enabled to produce all the effects that had excited his wonder in the Diorama. He has since carried out the same principle, with equal success, in other views. A small apparatus of this kind affords a source of great delight, and to the artist it would be an instructive means of exemplifying the great importance of contrast in the disposal of lights and shadows.

We are not aware that any previous attempts have been made to explain the illusions of the Diorama, and we trust the preceding description will be found sufficiently clear to enable our readers to comprehend the principle, at least, on which those illusions depend. It is capable of almost innumerable modifications, which a little experience and ingenuity will enable the artist to adapt to produce any required effects.

AEROSTATION AS A MEANS OF LOCOMOTION.

(FROM A CORRESPONDENT.)

The article on Aerostation in the last number of the *INVENTORS' ADVOCATE*, concedes too much to the opponents of that science, on the ground of its asserted uselessness. It has already been turned to practically useful purposes on many occasions—not to mention the great permanent benefit it, from the outset, conferred on general science, by establishing an experimental acquaintance with those regions of the atmosphere, and their peculiarities, to which access could never otherwise have been obtained.

It is well known that, during the last general war, the French armies, particularly those operating in Germany, were in the habit of using balloons to reconnoitre their enemies' positions, and obtain accurate notions of the country all around; to which it was often owing, that they displayed in their combinations and movements a maturity of knowledge and skill, which struck Europe with astonishment as being little short of magic, and conducted more to their success than even their valor. Balloons were also continually employed by them, particularly during the Republic, when their object was to spread revolution before them in the countries invaded, in flying (if I may so speak) over the lines into the hostile territory, a series of proclamations and other papers, calculated to rouse the population on their behalf, by artful appeals to their prejudices, and all kinds of libels against existing governments. For these purposes, and every other kind of aerial irruption over lines impregnably guarded on *terra firma*, balloons were admirably adapted, and will always continue to be so in like exigencies—a worldly, matter of fact species of applicability, which itself takes them out of the list of Utopian schemes, even were they not also susceptible of rendering the essential service to general science on subjects connected with the atmosphere, to which I have alluded.

But the whole extent of the usefulness of which balloons are susceptible, must continue unknown so long as they are constructed in their present ridiculous manner. Mere capability of floatation, has hitherto been studied; and on that account, so immense a surface is exposed to the element in which they are to float, as to place them entirely at the mercy of that element, beyond the reach of all control on the part of those buoyed up by them. Who could expect to be able to manage a ship, with all her canvas permanently extended in every condition of sea and wind, in the way we behold her under full sail? Or how would fare the bird that should continually maintain its wings in full expansion, without raising, depressing, and perpetually shifting their angles of incidence, as sailors, primarily taught from that very source, furl, unfurl, and tack their sails? Besides, how can men dangling in a pensile car, apply steadily any governing force to an immense loose spheroid floating above them, and rolling to and fro with all kinds of undulatory motions, like the head of a drunken man, whose nerveless body cannot steadily poised and sustain it? Balloons must be of firm material, and compact uniform structure, like the

ship or the bird, before they can be made as available for man's service as they might; and it is really surprising, in this age of invention, that they have not long since been so. The floating body, formed like a vessel, in order to live at sea if falling into it, must be placed under the feet of those who command and guide it, as the ship is; and those who doubt that such a body could be formed and made to float in the air, have only to look at any of our ponderous gasometers, to get quit of all their difficulties on that point. The body once floating, and trimmed and balanced like the ship, or the bird, there could be no more difficulty in directing its course than is experienced in the case of the ship and bird in their respective elements.

I could go into a vast field of illustrative argument in support of these views; but I content myself with thus briefly throwing out the main ideas merely; knowing, that to the ingenious this is at all times sufficient, to unlock for them the whole *arcana* of any given subject. W. B.

We cannot felicitate our correspondent on his notion of riding on the top of a balloon, nor do we see the advantage to be gained, even could he retain that position. This idea reminds us of an apparatus we saw, some time ago, constructed by an ingenious gentleman, for walking upon water. It consisted of two large oil-silk bags to be inflated with air, and fastened to the feet by straps. There was no denying that the buoyancy of the confined air was adequate to sustain the weight of the body, and to keep the feet well out of the water; but as the weight of the wearer would naturally make the apparatus top-heavy, he would be obliged to tread the water in an inverted position—a somewhat material consideration on that element. We fear our correspondent would experience a similar fate, were he to try his experiment of mounting on the top of a balloon. He might, perhaps, sit securely astride his aerial Bucephalus until the restraining cords were unloosed, but when poised in air, he would roll over, and be carried through the clouds with his head where his feet should be; a style of riding which, we think, he must admit to have more of novelty than convenience to recommend it.

NEW INVENTIONS.

MANUFACTURE OF BRICKS BY A NEW PROCESS.

A patent, for 15 years, has been obtained for a machine capable of producing **FIFTY THOUSAND** BRICKS in twelve hours, and requiring from 14 to 16 workmen only. The manner in which the clay is subjected to a strong pressure, renders the bricks much more compact than the common process. They are of a superior quality, are dry in 24 hours, and the next day may be put in the kiln; and as they are never handled by the workmen, they are exceedingly well-shaped, and regular in size. The clay may be worked pure, without any preparation.

This machine cannot fail to attract general attention. The advantages, promised by the inventor, have been confirmed by its introduction into several large brick manufactures; and it may be considered as the commencement of a new era in the art of brick making, which, notwithstanding its antiquity, is still in its infancy.

A NEW PUMP.

Mr. James Sutcliffe, of Limerick, superintendent of the dock works, under Sir Thomas Dean and Co., has recently invented and taken out a patent for a pump, which bids fair to supersede everything of the kind that has gone before it. Its principle is infallible, and infinitely superior for all practical purposes. In its almost total relief from friction, a continuous stream, and having no valves,

can never be rendered useless by being choked, so common with every other one before; the vacuum is moved by an ellipsis revolving in a cylinder, and will discharge anything that can pass up the pipe. It is made entirely of iron, so it is almost everlasting. It will treble the quantum of the common pump by the same power, and, if applied to an engine, will work wonders.—*Dublin Monitor.*

PUMPKIN SUGAR IN HUNGARY.

M. Louis Hoffman, in concert with M. Emeric Devay, has established a small manufactory of sugar from pumpkins, at Zambor, in Hungary.* He has made 40 cwt. of raw sugar, of which he has refined a small part; and he has taken out a patent for this kingdom.

One hundred weight of pumpkins produces as much sugar as 100 weight of beetroot. From 26 or 27 cwt. of pumpkins, M. Hoffman has obtained a cwt. of sugar and a cwt. of syrup. A hectare of land produces three or four times a greater weight of pumpkins than of beetroot, without reckoning the Indian corn; 3,200 square yards yield at least 800 cwt. of pumpkins. Some weigh as much as two cwt. each,—one has been known to weigh 260 lbs.; and every square yard of ground will yield one pumpkin of the ordinary size.

In manufacturing the sugar, the pumpkins are first opened, and cut in pieces (taking away the seeds, from which may be made an excellent oil, one-fifth of their weight); they are then grated, rind and all, with strong graters, such as are used for beetroot, because the rind is hard. The pulp is pressed in the same way as beetroot. M. Hoffman, with a very indifferent press, obtained 82 parts out of 100 of juice, of from 3 to 11 degré de Beaumé. This juice has one great advantage over that of beetroot, that it does not easily turn sour, but retains its sweetness for more than 24 hours. It is purified and scummed by means of animal charcoal, the same as the juice of beetroot. A beetroot sugar factory would answer extremely well for pumpkins; it would only be necessary to add an oil-millstone for breaking the large pieces of the fruit before grating.

Sheep prefer the refuse of pumpkins to that of beetroot; and whilst the latter requires a rich and deep soil, the former will grow very well in light and less fertile ground. The humid lands of the north are most suitable to beetroot, whilst pumpkins grow best in the south. In the colonies, the variety called *giroumont*, contains much more saccharine matter than the *potiron* near Paris; and in the Isle of Bourbon, particularly, there is a sort of gourd, which yields more sugar than any fruit of the kind in Europe. The sugar cane, however, has this very great advantage over the gourd; it furnishes its own fuel for the process of sugar-making.

A REPEATING CLOCK.

M. A. Neuburger, of rue Vivienne, Paris, has invented a repeating clock, which goes for three months. Notwithstanding this extension of its time, the repeater performs with regularity, and the works do not exceed the ordinary size. The price, moreover, is comparatively trifling.

WATERPROOF CLOTH.

At the last sitting of the Council of Health, at Brussels, M. de Bayav made a report upon a specimen of waterproof cloth, made by the Anglo-Belgian company. After actual experiment, it has been found altogether impervious to water, though pervious to air, steam, &c.

* We briefly alluded to this in our paper of last week.

VARIETIES.

The New Royal Exchange.—The Graham Committee met a few days since, at Mercers' hall, for the purpose of discussing the subject of the selection of a plan for the new Royal Exchange, and we

trust that a proper plan will soon be fixed upon. There are eight plans now before Mr. George Smith, the surveyor, viz. the five that were stated by Sir Robert Smirke, Mr. Gwilt, and Mr. Hardwick, to be of the first class of designs, and the three of the second class; and Mr. Smith is to report upon them all on the 31st instant. Whether Mr. Smith's report will coincide with the opinion of the eminent men whose names we have just mentioned, that not one of the designs was suitable for a building of the kind, or whether he will select one as adapted to the occasion, is considered to be matter of doubt. The houses in Sweeting's-alley are shut up, and the materials are advertised for sale—indeed, some of the materials are now actually on sale. If, therefore, a design for a new Royal Exchange had been fixed upon two months ago, still nothing could have been done towards its erection until the ground should be cleared, and that indispensable part of the business is about to be accomplished at the earliest period at which by law it could be effected. We are informed that the old site will be forthwith levelled, and that a passage will be made across it from Cornhill to Bartholomew-lane, an alteration which will be productive of great convenience to the public.

Hogarth's Family Bible was recently sold among the books belonging to Mr. Hoole, the translator of Tasso. It notices Hogarth's marriage (in his own hand) to Jane Thornhill, the daughter of St. James, 1728, and contains other family notices relative to this "great teacher of mankind." The edition is one of Bill's, of about 1605.

Proper Mode of Slacking Lime.—When lime is carted out, and left in the common way to slack or fall by itself, without being covered over with earth or turves, it slacks or falls very unequally and unprofitably; indeed, much of it will never fall. But if it be covered carefully over, immediately when it is laid down on the field, the heat of the mass being retained, the lime then falls equally, and yields a greater quantity of flour lime. This practice is worthy the attention at all times of every farmer.

The statue of Broussais, the physician, and author of *Medecine Physiologique*, is about to be erected in the middle of the gallery of the Val de Grâce, at Paris. The minister of war has subscribed 1,000 francs to it; 473 medical gentlemen, 3,731 francs; and the military administration 600 francs.

An extensive gold mine has been discovered in Randolph county, Alabama. In a single day, gold to the amount of 4,000 dollars was obtained. One lump was found worth 320 dollars. The mine is believed to be the richest in North America.

At the sitting of the Academy of Moral and Political Sciences at Paris, a very lively debate ensued upon the conclusion of M. Blanqui's report on Africa, to which M. Jouffroy has promised a reply. MM. Delaborde and Charles Dupin dwelt upon the advantages to be derived from the colony; the former ascribing its ill success to the errors committed in its management. M. C. Dupin said, that he entertained the most sanguine hopes for the advantageous results to be drawn from the *génie colonisateur* of the French; and the members were not slow in entering into the pleasantry of the expression. Some further reflections which fell from M. Dupin in justification of isolated colonial establishments, offended the political principles of some of the members, whose excitement the president easily appealed. The debate was adjourned.

By statistical returns, during a series of years, it has been ascertained that there is an average of one deaf and dumb person to every 2,000 inhabitants of France; or 16,000 deaf and dumb persons in the whole kingdom.

M. Jacob, the bookseller of Brussels, has been under the necessity of offering his private library for sale. It consists almost solely of works relating to the history of France; and contains, among other things, upwards of a hundred manuscripts illustrative of the history of provinces and towns.

The catalogue resembles that of M. de Pixérécourt, which was drawn up by M. Jacob, and abounds with historical and bibliographical notes. "This collection," says M. Jacob in the preface, "which I formed for my private use, is as complete a one in its way as can be made. The materials for forming a French history are comprised in 50,000 separate works, and in the 1,950 which are in my collection, full half of the topics enumerated in the voluminous works of M. Lélong and his continuators, will be found."

A daughter of the late Samuel Crompton, sole inventor of the "mule," is compelled to apply for parochial relief; while the family of Arkwright, who, in the first instance, merely copied an invention or machine, ranks among the wealthiest in the kingdom.—*Lancaster Guardian.*

ASTRONOMICAL INQUIRY.

ON A CONJUNCTION OF THE SUN, MOON, PLANETS, AND SATELLITES; AND OF THE PERIOD OF THE OBLIQUITY OF THE ECLIPTIC—BY MR. UTTING, OF LYNN REGIS, NORFOLK.

On examining the motions of the planets and satellites for different periods, I have ascertained that the shortest period in which a conjunction can take place, contains 250,904 solar years, in which are contained 91,640,740 solar days, supposing them to have been in a line of conjunction at the commencement of the above period.

The following tables contain the number of years or revolutions of the planets round the sun, and of the satellites round their primaries, during the above period, with the length of the year for each planet, and also the length of time occupied by each satellite in revolving round its primary:—

Number of Revolutions.	Tropical Periods.		
	degrees.	hours.	minutes. seconds.
1,041,746	87	23	14 30. 6.887
407,844	224	16	41 37. 2.372
220,904	365	5	48 49. 8.855
Mars	133,406	686	22 20 53. 3.049
Jupiter	21,161	4,330	15 3 9. 3.965
Saturn	8,527	10,747	3 0 51. 9.292
Uranus	2,996	30,587	16 43 34. 6.862
Moon	3,334,152	27	7 43 4. 7.129
Moon's perihelia	28,260	3,231	8 6 25. 8.956
Moon's node	13,480	6,789	6 35 15. 1.335
Sun's perihelia	12	20,908	3 solar years.

SATELLITES OF JUPITER.

Sat. 1.	Number of Revolutions.	Sidereal period in days.	
		1.	2.
51,799,662	1.	7,691,378	
25,805,708	2.	3. 5,511,810*	
12,808,731	3.	7. 1,545,526	
5,491,162	4.	16. 6,887,700	

* In Mr. Baily's Astronomical Tables, &c., (1827,) there appears to be a misprint in the period of this satellite, as it should be as above stated, instead of 3.551810.—Vide, "Exposition du Système du Monde." Par M. Laplace. 4th Edition, page 135.

SATELLITES OF SATURN.		
Sat. 1.	97,209,895	9,427,100
2.	66,879,335	1. 3,702,400
3.	48,543,670	1. 8,878,000
4.	33,451,874	2. 7,394,800
5.	20,285,765	4. 5,174,900
6.	5,747,194	15. 9,453,013
7.	1,153,190	79. 3,295,821

SATELLITES OF URANUS.		
Sat. 1.	15,551,835	5. 892,600
2.	10,525,192	8. 706,800
3.	8,360,542	10. 961,100
4.	6,810,450	13. 455,900
5.	2,406,848	38. 075,000
6.	850,933	107. 694,425

SECULAR MOTIONS OF THE PLANETS DERIVED FROM THE FOREGOING PERIODS.

Mercury	Revolutions. degrees, minutes, seconds.		
	41	5	6
Venus	162	199	10 036.752
Earth	100	...	45 52. 068.567
Mars	53	61	39 20. 552.479
Jupiter	8	156	16 10. 403.513
Saturn	3	143	23. 764.979
Uranus	1	69	32 43. 391.566
Moon	1,336	307	32 47. 472.371
Moon's perihelia	11	109	12 44. 814.688
Moon's node	5	134	10 2. 175.670
Sun's perihelia	73	18	518.257

The above secular motions vary a few seconds from the secular motions as given at the present time, but if the secular variations to which they are subject be applied to the mean motions during the whole period, they may, for what we know to the contrary, oscillate on each side of the above as a mean. The secular precession of the equinoctial points at the present time is 1 deg. 23 min. 30 sec.

The above period contains 10 revolutions of the precession, with a mean secular precession of 1 deg. 26 min. 5 sec. in a century; but I cannot at present determine whether this comes within the limits of its variation; if it does, the sidereal periods of the planets will contain ten revolutions less, and the tropical periods of the satellites ten revolutions more than are given in their tables; consequently there will be a certain number of complete periods in both the tropical motions of the planets and satellites.

The maximum variation of the obliquity of the ecliptic, as stated by Laplace, is 1 deg. 21 min., which is the extent of the oscillations on either side of the mean obliquity, 2 deg. 42 min. being the total extent of the variation: one complete period of the oscillations contains 41,817½ years, consequently six oscillations are performed in 250,904 solar years, which gives 46.4879 sec. for the mean secular variation of the obliquity.

The periodic times of Jupiter's first and second satellites, the first six satellites of Saturn, and all the satellites of Uranus, stand the same as in the most correct tables, Jupiter's third satellite being .000,0001 less, and his fourth satellite .000,0003 more; the seventh satellite of Saturn is also .000,0179 less than given by Mr. Baily in the work before referred to. It is hardly necessary to men-

tion that each planet and satellite will complete a certain number of revolutions precisely at the same instant of time, in respect to the month, day, hour, &c., as relates to the earth. The conjunction will also take place at the same point of the ecliptic as that in which they were situated at the commencement of the said period, the planets in reference to the sun, and the satellites in reference to their primaries.

It may, perhaps, be objected, that the above period far exceeds the probable duration of the solar system, but of this we can say nothing. It is, however, far exceeded by the Cali-yug, Maha-yug, and Divine-age, of the Hindoos, which contains 4,320,000 years. It is also exceeded by Mr. Squire, who, in his Grammar of Astronomy,* gives a period of 280,000 years for a supposed grand conjunction of the planets.

[Note.]—A singular circumstance occurs in respect to the sidereal periods of the satellites of Saturn and Uranus; in the above tables, the decimals are extended to two places of figures more than are given in Mr. Baily's tables, and in ten cases out of thirteen the last two figures are ciphers, but which are all given to the nearest unit, having been computed to ten places of decimals, by dividing the 91,640,740 days by the number of revolutions of each satellite respectively.

The foregoing paper having been put into the hands of the secretary of the Uranian Society, he has thought it of sufficient interest to be placed before the public, especially as it has an important bearing upon the theory of astro-meteorology—a subject which for some time past has engaged the attention of the society to which he belongs; but in so doing he cautions those who may peruse its contents against the statements made relative to an oscillation of the ecliptic on each side of a mean obliquity.

In the year 1836, Mr. W. D. Saull wrote an essay on the "Coincidence of Astronomical and Geological Phenomena," in which he asserted a diminution of the obliquity of the ecliptic at the rate of 50.25 sec. in a century, and deduced as a natural consequence a regular and gradual movement and ultimate transition of the poles of the earth, assigning these as the causes of the geological changes to which our globe has been subjected. Although this view excited at the time a smile from the philosophical world, and was by them considered as a possible probability only; yet, in the year 1839, a paper by Dr. Pearson, read before the Astronomical Society, confirmed the statement made by Mr. Saull, as far as regards a regular rate of diminution in the obliquity of the ecliptic, differing only in the quantity thereof.

J. M. CAVALIER,

Hon. Sec. Uranian Society.]

Stepney, Jan. 21, 1840.

* Conjunction of the Solar System.

"If the planets Mercury, Venus, Terra, Mars, Jupiter, and Saturn, be in conjunction at any time in the period of 280,000 years, they will be in conjunction again,

Mercury after making 1162577 in 8836185098921
Venus 455122 in 8835595689448
Terra 280000 in 8835940680000
Mars 148878 in 8835946519500
Jupiter 23616 in 8835946544448
Saturn 9516 in 8835946558608

Squire's Grammar of Astronomy, Edit. of 1826, page 62, Art. 138. par. 12.

FINE ARTS.

ON VENETIAN PAINTING AND COLORING.

Venetian painting, of which Titian must be considered to be the great representative, has been designated the school of color. Thus, as in the instance of the Roman and other schools, the method of using or adopting a particular portion of the material, or means of signification, has been held to

be ultimately distinctive of its character. The spirit — the *vivida vis animi* — which distinguishes different periods and different schools of art one from the other, has been placed in lines and in tints, and its law which led to the adoption or rejection—the selection and combination of these—has remained unnoticed. Its *vehicula*, like the cover of an Egyptian two thousand years dead, have been looked to for all that was to characterise it—the chrysalis shell mistaken for the living *pysche*, which floated unobserved over-head. That “men seek truth in their own little world, and not in the great and common world,” has been amply exemplified in connexion with art. The microcosm of individual and partial notions has there, as in every other subject, too frequently been made to regulate the decisions of judgment.

The nature of the color of Venetian painting is a condition merely of the essential character of the Venetian school, not that in itself. The color, and also the form and light of Giorgione and Titian, and to a certain extent of their predecessors, but still more eminently of their successors, are dependent upon the ultimate relation of their works. The individually varied styles of the Bellini, Giorgione, Titian, Bonifazio, the elder Palma, and Schiavone,* with those others who may be considered to belong to this school, have one basement. While they differ in certain particulars, each exhibiting that variety which immediately distinguishes his works, they are bound together by one general intention or reference. From the time of Gentile and Giovanni Bellini, (before which none of the schools of revived art had made any very distinct *endexis* of their particular character—all having, with considerable similarity, been step by step progressing in the use of the language of art, regulated in the mode of their productions by the type which had been founded upon those sentiments in connexion with which it had reappeared)—from his time to that of the younger Palma, when deterioration had become apparent, Venetian painting is directed by one predominating object, by which it is separated from the other schools of the same period, and in obedience to the dictates of which its style of form, color, and light and shade, originated. These, however, as means or portions of the language of painting, are each differently adapted, from their specific nature, to constitute an efficient medium in working out or substantiating this primary end; in connexion with which they are also employed with different degrees of success. In both respects—in efficiency, and in the degree of power with which it has been employed to enunciate the express use or end of the painting of Titian and his followers—color becomes an obvious and striking feature of their art; and hence has been considered to be its ultimate distinction.

Another designation, still less adequate to express the character of Venetian painting, has been applied to it—that of the Ornamental School. But the sense attached to the term has not been defined. Whether, however, it is to be understood to apply to sentiment of an universal or of a fictitious kind, or to the mere representation of actual variety or decorative multiplicity of parts, in form, color, and light—allowing the most extended interpretation to be put upon the title—it is perfectly inapplicable to many of the most important productions of the school of Venice, which most strongly exemplify its particular character. Can the inspissated depth in color and tone of the *Virgin and Saints*, by Giovanni Bellini; the unengaging substantiality of the *Concert Champêtre* of Giorgione; the ponderous solidity of the *Assumption of the Virgin*, by Titian; the strength and corrugated *impasto* of the *Virgin in Glory*, by Bonifazio; the sober monotonous uniformity of the *St. Peter surrounded by Saints*, by the elder Palma—can these works, which may be held to represent the greater number of the others

of those masters—the roots and stem of Venetian painting—be called ornamental? The attempt, however, to embrace them inclusively under this appellation, speaks the unity which was felt to exist among them, although its nature was not perceived.

But while color and ornament are neither finally constitutive of the distinct nature of this circle of painting—and with form, and light and shade, must be considered merely to be the means through which signification is intimated—it must, at the same time, be observed that they bear relation to the art of Titian and his school, which is peculiar and distinct from that which they hold in respect to the works of Michael Angelo and Raphael—a relation upon which their prominence in many instances depends.

Portrait of Guizot.—A portrait of M. Guizot has been published by subscription. It is engraved by M. Calamatta, after a painting by Delaroche, which is in M. Guizot's possession. It is a performance of considerable skill, both as regards the workmanship and the design. Only a limited number of copies have been struck off.

The dimensions of the portrait are of the natural proportion, and M. Guizot is represented at a moment of repose, with his right hand partially buried in the chest of his coat. He is drawn in a graceful and easy attitude, and is supposed to hold the auditory in expectation by the emphatic meaning pourtrayed in his countenance.

TALMA,— HIS DRAMATIC CAREER.

It was frequently the habit of Talma to announce to the *Partie* the latest news of his old companion, from Castiglione, Arcola, or Rivoli. Before setting out for Italy, which he went to conquer, so to try his hand in warfare, Buonaparte was married. His union with the widow of the Marquis de Beauharnais had introduced him to a family of long standing, and became the mysterious bond which, at a later period, associated the present with the past and the monarchy with the republic. Talma followed in the same course. A young actress, the pupil of the charming Contat, at that time commanded the applause of the Parisian public. Her's was the true old school of French acting—“*La Comédie*” of the salons of the aristocracy; and she pleased Talma by the elegance of her manners and the felicity of her style,—her name, Petit Vanhove.

Petit Vanhove gave Talma “sweet counsel;” she was his Madame de Beauharnais. Julie, however, suspected what she had never been unfortunate enough to discover, and jealousy rendered her attentions fatiguing. When a woman feels herself neglected, her part is difficult to play, and requires infinite tact,—tranquil resignation; if, on the contrary, she adopt a lofty, angry tone, she drives away the lover, who, otherwise, had never *dared* to have left her. And thus it was: at the end of a quarrel, unusually stormy, Talma left her—for ever, and by letter requested her consent to a divorce, which was then permitted by the French law. Though the courage of Julie fainted, her pride supplied its place; and her answer was a master-piece of indignant eloquence. Talma contracted a second marriage, and under the guidance of his new companion, and in the gratification of his double passion, his love and his profession, with a gentle professor in his *ménage*, made his appearance in *Orosmane et Zamore*; he was not bold enough to step beyond Voltaire, who may be styled a writer of the transition between Chénier and Racine. These attempts added but little to his fame; *Othello* rose triumphant from the ruins of *Orosmane*.

About this time it was, he learnt that Julie was dying; sinking under the effects of a fatal malady. Talma, in agitation, wrote pressingly, requesting permission for an interview. The reply was long

delayed; it came at length however, and the day and hour were fixed. It may be easily imagined that each hour until the appointed time, appeared an age to Talma; in fevered anxiety he left his house, and arrived at the home he had deserted: long folds of crape cast a funereal gloom over the apartments, and rested on a coffin.—It was Julie's! This sad and mournful incident was the cause of a nervous affection, which at that time severely affected the health of Talma, and during the whole course of his after life he could never speak or think of it without a sensation of terror; and perhaps it may with justice be said, that the sombre and melancholy points in his acting may, in a great measure be traced to the influence of this affecting scene. The joys and sorrows of every day life, equally supplied Talma with the means of enriching the study of his art.

An irresistible reaction took place in France; every thing became subject to it, the political as well as the social order of things,—the objects of the every day world as well as the creations of the imagination. Political power, at first divided amongst the thousand hands of the convention, and afterwards concentrated in the discretion of five directors, fell (in its old natural course) into the grasp of one. One sword, under the semblance of a sceptre, alone governed the kingdom. The republic, now but an idle name, was transformed into a monarchy. The same spirit influenced the drama; the whole literature of the revolution seemed as it were to inspire but a feeling of disgust. It was with difficulty that even Talma trod the stage in safety, in the midst of this changing taste. How severe is the public when the tone of its opinion changes! When a reflux of the popular mind takes place, the leaders in the van stop short, as with the sudden sensation of exhaustion; whilst those who lagged in the rear, in some sort the children of adverse fortune, which of its nature is passive of endurance, re-appear on the field, and with loud and angry voice condemn all which they themselves have permitted to be done.

Whilst this tone of feeling prevailed, a young man, whose southern accent betrayed his natal soil, applied to the *Théâtre de la République*, which with the shifting tide of politics, had changed its name to the *Théâtre Français*, with a union of the two companies. Fortunate patronage opened the door to the youthful applicant, and a morning was appointed for a trial of his talent: Talma, however, was not present; he was then playing at Marseilles. The young aspirant delivered some passages from the character of *Oreste* in *Iphigénie en Tauride*.

He was about to take his leave, when Baptiste the elder, whose experience and character commanded respect, observed,—“Very true! very true! doubtless we cannot say this is *first-rate* talent; but take my word for it, if he should make his *début* to-night, we shall have all Paris here to-morrow.” This remark attracted the attention of Dugazon. “I will take charge of him,” said he. Now Dugazon was a man inspired with the recollection of Lekain's peculiar style, which with singular felicity he succeeded in infusing into the mind of his new pupil, who, a short time after, in the absence of Talma, made his first appearance in *Achille* to almost empty benches;* but his second appearance brought a receipt of 5,000 francs. He afterwards successively appeared in the several characters of *Orosmane*, *Tancrede*, *Vendôme*, *Gengis-Kun*, *Mahomet*, and in fact, in the whole of Lekain's line of characters. The *débris* of the old school of society received him with enthusiasm; in him they recalled the past, the pleasing memory of their early days,—the drama as it existed under a *régime* they loved—which suited their taste, opinions, and habits, and which, they fondly hoped, might rise again, since the old school of acting was revived! Lafon, for it was he, was a man of the re-action.

Talma was in his box one night at a representation of *Tancrede*. On leaving the theatre he took Monvel by the arm, and strolling with him under

* Sebastian Piombo is not mentioned here, merely to avoid confusion; his style, which is essentially Venetian, having been frequently grafted on the conceptions of Michael Angelo, as in the *Flagellation*, in *S. Pietro*, in *Montorio Rome*, and the *Lesarne*, in the National Gallery.

* The receipts on this occasion are said not to have exceeded 80 francs.

the colonnades of the Palais Royal, said laughingly, "I have been the Cromwell of the stage : I shall now play the part of William of Orange. I will myself be the connecting link between all that has been accomplished in the dramatic art and all that yet remains to be done."—"I will second you," replied Monvel; "I have seen Lekain."—"I knew it," said Talma; "Dugazon has, by your instrumentality, inspired our new actor with his spirit."

From this period, Talma retired, as it were, from the first post, resigning his position on the stage to do honor to the man whom the most temperate judges affirmed to be his rival; sometimes, even by a well-timed modesty, he would take second-rate characters. He played *Nerestan* in the simple costume of *Chevalier*, by the side of Lafon, sparkling with gold and jewels in the part of *Orosmane*. But at home, in the secure silence of the study, he concentrated all his power of thought on the *chef-d'oeuvres* of the French drama, Corneille, Rotrou, Racine, Crebillin, La Harpe, and Lafosse; constantly would he inquire of Monvel how Lekain conceived them; and thus impregnated with the soul of these fine writers, living only in the world of history, amid the poesy of antiquity, contemplating Achilles and Nero in the verse of Homer and the page of Tacitus, he appeared to resign himself to the destiny which the public prepared for him, and with careless dignity replied to those friends who either sought to offer him consolation, or to excite his ardor, "Laissons le passer !"

Lafon was intoxicated with success,—and well he might be, for it was indeed great. Each character of the old school was amongst his triumphs: *Zaire vous pleurez*;—*il s'en presentera, gardez vous d'en douter*. All the points which Lekain made so well, were revived in Lafon. But suddenly the man from whom he tried to snatch the wreath of fame, roused like a lioness robbed of her whelps. He came—as yet nothing—but one whose future was all before him! He played the two *Orestes*, *Neron*, *Edipe*, *Rhadamiste*, *Achille*, *Cinna*, *Horace*, *le Cid*, *Abner*, *Tancrède*, *Vendôme*, *Spartacus*, *Coriolan*, *Fayel*, *Bayard*, *Arsace*, *Ladislas*, *César*, *Brutus*, *Sevère*, *Antiochus*, *Nicomede*; and these concluded, after having rapt to enthusiasm the astonished public, by the exhibition of a fresh conception in these old and familiar parts, he brought out *Macbeth*, *Hamlet*, *Othello*, *Pharao*, no longer as an ancient but a new study. Even as by the magic of mind, he infused the spirit of the present into the composition of an elder time, so, by an antagonist power, the soul of antiquity seemed in his hands to inspire the creations of the modern muse: *Macbeth* was combined with *Oedipus*, and *Oedipus* with *Macbeth*. Arnault embraced him one evening in the slips; and whilst the theatre was still resounding with applause after the representation of *Macbeth*, exclaimed before a numerous circle,—"Of a truth, Talma, you should appear in public, with Sophocles in one hand, and Shakespeare in the other."

Will his pride ruin him in the midst of all this triumph? Judge for yourself, reader. When complimented on what he had achieved, he spoke only of what he intended to do. When congratulated on having, as it were, left the boundaries of his art behind him, he would speak of them as yet far distant: "They are yet to be reached," would he exclaim in a mournful tone, as though he doubted his own powers: he magnified, so to speak, the race before him, until he induced his hearers to believe he had scarcely entered on it—that he had but just started! Did any one in his presence refer to some of the novel and bold beauties which he had introduced in the drama; if, for instance, some one had spoken of the exquisite play of his countenance, his action, his attitude, his bearing in *Cinna* when *Augustus*, informed of the conspiracy, reproaches him with his ingratitude, he would reply,—"But, my dear friend, all that is not acting. *Monvel* is so natural, he takes me with him to Rome so completely, that I become *Cinna* himself at once. He draws me towards him; he overwhelms me; I am confounded in his presence, where I sit like a trembling slave, under the severity of his eloquence. In vain do I try to rise that I may conceal my

shame by an attitude of defiance; I fall back in my chair; I am transfixed!" If some one had attempted to analyse the deep sentiment which he threw into the simple passage in the part of *Achille*, "*Votre fille vivra!*" Talma would say,—"You are deceived; that point is Lekain's all over."—"Purbleu," said Ducis, good-humoredly, "*vous y seriez ma fille* is in Euripides, but *Racine* is not the less *Racine* for all that!"

The public grew enamored of the noble study of Talma, which thus continually produced new wonders; the *Théâtre Français* was no longer a *delassement*—a rendezvous of frivolous pleasure—men went there to seek instruction—to study—to sit, as in the Bibliothèque Royale, in the company of the great works of the human mind. At the close of each evening it was a common expression, "Surely this is perfection! nothing can surpass this!" and the next day the point of perfection was passed. In like manner would an admiring people visit Michael Angelo in his *studio*, when busied in the finish of his celebrated statue of David, and exclaim "Tis perfect!" and yet, a second visit, and all was changed: but in what particular part? One blow of the chisel had fixed the aspect, and that aspect revealed a monarch!

Embarked upon this tide of triumph, by which Talma reached at last the character of *Manlius*, (a creation which is found but once in the life of an artist) the most lively emotions welcomed him on all sides. Himself a *fictitious hero* at the theatre; a true hero of the real world without, recalled to his mind sweet remembrances, full of honest pride. Did he require a model? he had but to direct his gaze to Germany, Prussia, Austerlitz, and Jena. Napoleon rendered the study of antiquity easy to Talma, by uniting in himself all the varied characters of Plutarch. It is related, that on the occasion of a representation of *Iphigénie en Aulide*, whilst the first scene was acting, a supplement of the *Moniteur* found its way into the theatre, announcing that a battle had been just won; the actors were interrupted—the paper was at last read, to satisfy the curiosity of the impatient audience—the tragedy was resumed—and the two verses,

Mais qui peut dans sa course arrêter ce torrent!
Achille va combattre et triomphe en courant,

were re-echoed through the *salle*. The enthusiasm of the *parterre* may easily be conceived. It was then that Talma made his appearance; Achilles himself seemed to be present! Aye, a more than Achilles, whose exploits had been detailed. Thus the presence of Talma was associated with a national victory! The next day one of his friends, meeting him, exclaimed, "Talma, last night you were as fine as the *Moniteur*." The character of Achilles, however, in the judgment of Talma, had not yet received its last touch; it was his subject of serious study for fifteen years. "I have often been obliged," he would say, "to struggle even with Racine himself; and what a struggle! fortunately Homer was my second. Achilles, according to my notion, was too French, too *chevaleresque*; he did not suit me very well; but at last, I brought him under the walls of Troy, and I feel now more at my ease." This sort of careful study he devoted more or less to all his characters. "I change, I correct, I modify without ceasing, but always in silence and in my secret thought," was an observation of his; "and then when the evening comes, and the theatre, I throw my whole soul into the ideal composition, and, if I feel the *inspiration*, then I surrender myself to the impulse, so, if possible, to surpass the *labored efforts* of the mind."

The thirst of renown, the love of his art, would never have been sufficient for Talma. His evil, as well as his good genius, combined to urge him on. His evil genius, Geoffroy, lashed all his faults with savage severity. Geoffroy was at the head of the literary re-action; caressing and praising Lafon,—abusing Voltaire as a philosopher, Talma as an innovator. His good genius, on the other hand, gave him good counsel, full of taste and sound intelligence. But who was this good genius? The fairy tales can alone reveal the secret. For ten years

and more, this invisible, unknown angel, or demon, continually held an anonymous correspondence with Talma. Whenever he played he was sure to receive the next day, by the post, a letter, without a signature, containing a criticism of profound judgment. This mysterious correspondent had seen Lekain; and the letters preserved among the papers of Talma present a just and learned comparison of the merits of these two great actors. From the letters themselves, it may be seen that the advice they contained was followed. "In the first four acts of *Oreste* your improvement is remarkable," says one of the letters, "The faults which I pointed out to you are no longer observable. You are now engaged in a fair struggle with Lekain; and between you (though of talent so different) the victory is doubtful; but, in the fifth act, Lekain must yield the palm: apparently he has never descended into the infernal regions as you have done, for he could not contrive, like you, to bring the *Eumenides* before us. They are your companions—him they destroy..

(To be Continued.)

FOREIGN THEATRES.

PARIS.—*Académie Royale de Musique*.—The theatrical horizon of our capital, begins to clear up. We have this week had better bills of fare than have been offered us for some time past,—still the season is not what it should be. Let us commence with the new opera of the "*Draper*" by Hallevy, composer of the "*Jewess*." The first two acts passed over rather languidly, notwithstanding the really beautiful duo between Urban and Bayu in the second, which may be considered as a sort of *chef-d'œuvre* of combinations of refined melody clever dialogue, judicious orchestral accompaniment, and exquisite instrumentation: the "*refrain*,"

Un seul jour,
Un jour d'Amour.
Et plus mourir d'ivresse,

was truly thrilling. This *duo* called forth tumultuous applause. The third act merited better the suffrages of the public. Beside some really good vocal and instrumental music, which does honor to the composer, there is a scene of the first order in stage effect. The rolling of drums, the glittering of armor, the pomp, and variety of costumes, faithfully historical; and above all, the distant view of the superb and imposing cathedral of Chartres,—present an *ensemble* such as we have rarely witnessed.

Clotilde continues to be as attractive as ever. Madille Dorval promises to be a most admirable *emplacante* of Madille Mars; with a correct personification of the principal character, she throws into it an artlessness quite enchanting. This little by-play relieves the piece wonderfully; it may be compared to the bright blue of the sky appearing at intervals among lowering clouds, or to a soft sooth-ing melody stealing upon the ear during the terrors of a storm.

The *Ecole du Monde* at the *Théâtre Français*, is not without merit, although it is not likely to have a long run. The author has not avowed himself, and, if we may judge by the evident feeling of the audience, we think it not very probable he ever will.

There have been some excellent concerts of late; and the return to the capital of Ole Bull promises a fund of entertainment of a high order.

BRUSSELS.—The *Opera* is still valetudinarian; a few fine comedies, badly played, have been given us for the serious operas formerly so well got up upon these boards. These have been varied only by select acts from such pieces as *Lucia di Lammermoor*, *La Bayadère*, &c., the operatic corps being still incomplete. We have just heard that Jau-wreck will not return to Brussels; Madille Chapuis will replace her, until the arrival of Madille Klotz. Really the managers are to be pitied; instead of the golden harvest they expected to reap, they have

nothing before them, night after night, but a beggarly account of empty boxes, and yet, perhaps, no management in Europe have ever brought forward in one year, so great a variety of pieces. From the 1st of January to the 31st of December, 1839, were produced 9 operas, 18 plays and comedies, 3 ballets, and 74 vaudevilles, without taking into account an immense number of old stock pieces of all descriptions, brought forward to vary the bills of fare. One great cause of the want of success of the present administration, is the open war that exists between it and the press, which no considerations whatever will induce it to conciliate.

The *Grande Harmonie* have recently given a very fine concert, at which their Majesties were present. Madlle. Heinefetter, the German Catalini, was brilliant in the extreme. Her voice is of the most powerful order; one, in short, which we should like to hear from the boards of the Opera, for we should not feel in a constant agony, as at present, from the fear of its being destroyed by the overwhelming force of an orchestra, the most barbarous, in this respect, in all Europe.

The *Conservatory* begins on Sunday its annual concerts. It announces, for its first, a magnificent composition, by a young German master,—*A Midsummer Night's Dream*, and a fine symphony by Beethoven. The music of the *Conservatory* is by far the best in the kingdom, the latter furnished more talent since its foundation in 1830, than any musical institution in the world. We shall carefully report upon its admirable entertainments.

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YANKEE COURTSHIP.—*Jonathan Dunbatter* saw *Prudence Featall* at meeting. Jonathan sidled up to Prudence after meeting, and she a kind o' sidled off. He went closer, and axed her “if she would accept the crook of his elbow?” She resolved she would, and plumped her arm right round his. Jonathan felt all-overish, and said he liked the text—“*Seek and ye shall find,*” was pretty good readin. Prudence hinted that “ask and ye shall receive” was better. Jonathan thought so too, but this axing was a puzzler. A feller was apt to get into a snarl when he axed, and snarlin warn't no fun. Prudence guessed strawberries and cream was slick! Jonathan thought they warn't so slick’ as Pru's lips. “Now don't,” said Pru, and she gave Jonathan's arm an involuntary hug.” He was a leetle startled, but thunk his farm wanted some female help to look arter the house; Pru knew how to make a rale good break. “Now don't,” said Pru. “If I should!”—said Jonathan. “Now don't,” said Pru. “May-be you wouldn't?”—and Jonathan shuk all over, and Prudence replied, “If you be comin that game, you'd better tell my feyther.” “That's just what I want,” said Jonathan;

and in three weeks Jonathan and Prudence were “my old man,” and “my old woman.”

[There is much of nature about the Yankees, if they lack polish. We question if any two individuals of our country, could be found to “drive their horses” so evenly as did Jonathan and Prudence. They each had their own way, and their own way of having it—leaving nothing to be desired.]

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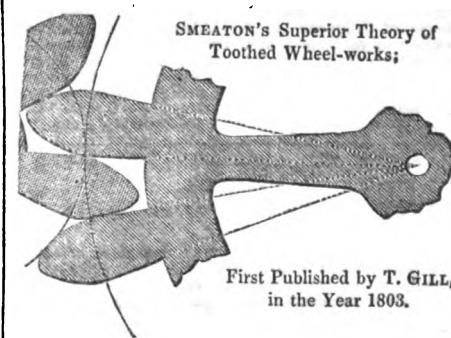
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SATURDAY, FEBRUARY 1, 1840.

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ON THE PATENT LAWS OF ENGLAND.

(Continued from our last.)

PROLONGATION OF PATENTS.

In our last number, after noticing the term of patent right, we made some explanatory remarks as to the mode of application required to be adopted under the late statute, for a prolongation of such period, and partially illustrated our general proposition, by reference to the proceedings of an unopposed petition before the judicial committee; but as applications of that nature are almost invariably contested with determined opposition, we continue the subject for the purpose of furnishing our readers with more specific information of the grounds which have hitherto induced an extension of patent privilege.

It may be collected from the standing orders of the Houses of Lords and Commons, that the legislature has been generally indisposed to extend the term of letters patent for new inventions, and looking at the unsuccessful results of the numerous applications to parliament by patentees on the subject, we conclude that it is almost hopeless to obtain an enlargement of the term when it is nearly terminated, and when the public are looking for an expiration of the patent right; indeed it would be inexpedient, and in some cases unjust, that it should be then extended, for many persons may have been gradually altering the state of their business with the view of adopting the invention at the end of the time appointed by the letters patent.

Since the standing orders of the House of Lords of the 23d June, 1820, no Act of Parliament has been passed, professedly, for enlarging the term of a patent; but the order seems to have been dispensed with in the passing of an act, which appears to be in effect, though not in terms, an act for extending the term of Mr. Langton's patent of 1825 for his improved method of seasoning timber and other wood; the patent, however, is not mentioned in the act, which is entitled "An Act for vesting and securing to John Stephen Langton, Esq., his executors, administrators, and assignees, certain profits and emoluments for a limited time:" after reciting the description of Mr. Langton's method, and that the invention would be of vast importance to the public service, and of general utility, provided timber so seasoned should prove as sound and durable as wood seasoned after the usual manner: but that the ascertainment of that fact, particularly for the purposes of ship-building, would require a very great outlay of capital, and a long period of time: in order, therefore, to encourage him to establish his invention, and that he may be recompensed for the same, and

that the use thereof may be immediately laid open on fair and equitable terms, it enacts, that certain specified profits are granted to the said J. S. Langton, &c., for the term of 21 years from the passing of the act, from all persons throughout his Majesty's dominions, except Ireland, who shall, directly or indirectly, use his method of seasoning timber, or shall counterfeit the same. The act grants liberty to all persons to use such method, on giving 7 days notice to Mr. Langton, such persons paying him in a certain specified manner.

The case of Mr. James Watt, the celebrated engineer, is particularly illustrative of the principles which govern applications for the extension of the term of letters patent. The act for vesting in him the sole use and property of certain steam-engines (then called fire-engines), of his invention, for a limited time, recites the patent and the enrollment of the specification, and the specification verbatim; and that the said James Watt hath employed many years and a considerable part of his fortune, in making experiments upon steam and steam-engines, with a view to improve those very useful machines, by which many very considerable advantages over the common steam-engines are acquired; but on account of the many difficulties which always arise in the execution of such large and complex machines, and of the long time requisite to make the necessary trials, he could not complete his invention before the end of the year 1774, and that in order to manufacture the engines with the necessary accuracy, and in such manner that they may be sold at moderate prices, a large sum of money must be previously expended in erecting mills and other apparatus, and as several years and repeated proofs will be required before any considerable part of the public can be convinced of the utility of the invention, and of their interest to adopt the same, the whole term granted by the letters patent may probably elapse before Mr. Watt can receive an advantage adequate to his labor and invention; and that by furnishing mechanical power at much less expense and in more convenient form than has been hitherto done, his engines may be of great utility in facilitating the operations in many great works and manufactures of this kingdom, yet it will not be in his power to carry this invention into that complete execution which he wishes, and so as to render the same of the highest utility to the public of which it is capable, unless the term shall be prolonged, and his property in the said invention secured for such time as may enable him to obtain an adequate compensation for his labor, time, and expense: for the purpose, therefore, of enabling and encouraging him to prosecute and complete the invention, so that the public may reap all the advantages to be derived therefrom in their fullest extent, the act provides that

the sole privilege and advantage of making, constructing, and selling the engines, shall be vested in him, &c., for 25 years. This act was obtained in the early part of his term, when the principle and advantages of his invention were but little known, but had the application been delayed to a later period, it is more than probable that it would have been most powerfully and successfully opposed.

From the sentences which we have distinguished by italics, the leading sentences for extension of the term of letters may be readily deduced.

(To be Continued.)

STEAM NAVIGATION BETWEEN FRANCE AND AMERICA.

The Ministry have just appointed a commission to inquire into the expediency of establishing a line of steam-packets between France and the two Americas. It appears as if the government were incapable of acting without consulting a commission. Steamers of the first class sail regularly between Great Britain and New York; numerous vessels are on the stocks at London and at Liverpool, destined to keep up the communication between England and Canada, the United States, the Antilles, the Gulf of Mexico, &c., and we have just appointed a commission of inquiry on the subject!! England wishes to become the centre of communication with the whole globe. Her steam navigation already embraces the two Indies. From London to Bombay the passage can be made in 40 days; from London to New York in 12 or 14 days. Should it be extended, by the aid of the six millions which the government annually grants, to the whole of North America, to Jamaica, to Mexico, and to a part of South America, it will embrace nearly the whole world. Thus England has obtained over us an advantage, which probably we can never expect entirely to recover; still we have important interests at stake; and we ought to put in our claim to a share of this navigation, of which she desires to have the exclusive monopoly. Our position on the continent of Europe, as regards trade with America, is sufficiently good to recommend it to the attention of government. It is to our ports, particularly Havre, that the merchants of Germany and Switzerland come to embark for the United States. It is the natural channel of commercial communication between the two worlds; but we lose all the advantages of our position if we suffer England to monopolise the new mode of navigation. All the passengers who

now crowd to our large seaports, all the valuable merchandise, with respect to which celerity compensates for the increased price of freight, will be transferred to the English steamers. The establishment of a regular line of steam-packets, therefore, is not with us a question of convenience, but essential to our commercial prosperity.

It would be useless to insist further upon the necessity of such an establishment, which is acknowledged, but we object to the plan apparently in contemplation. A line of steam-packets between France and America is spoken of, to be established at the public expense, and to be under the direction of the administration. This is exactly what we find fault with. A line of government packets would be little else than a rival to our commercial navy, set up under the auspices of the state. All government speculations are bad. When the administration of *Ponts et Chausées* took upon themselves the sole management of the railroads, their incapacity for the undertaking soon became evident, and it failed accordingly in their hands. The Levant packets are cited as a proof of success on the part of our government in such enterprises. But it is to be observed that the object of the Levant packets was solely political, whereas that of a steam navigation with America should be commercial and maritime. The owners of the steamers from London to Liverpool and New York rely not only upon passengers, but upon the freight to remunerate them. The amount of freight would be so much the more considerable in France, as we export to the United States a quantity of valuable goods, particularly silks, for which rapidity of conveyance would be everything. The government would appear in a singular character as agents for freight!

The English government has set us an excellent example. It does not come forward to supplant the commercial world, but to aid it by an annual grant to the different companies of more than six millions for the establishment of 20 steam-packets of 400 horse power between Great Britain and the two Americas. The French government should pursue a similar plan, and encourage the enterprise and industry of individuals, by which alone the desired object can be effected. But the first step is to inspire confidence, which we are afraid the composition of the commission is not calculated to do. It is to be composed, we are told, of men from every department of the administration, but only one merchant, and he is a Parisian; not a single merchant or ship-owner from any of our seaports!

It is thus, that whenever the public voice forces upon the French government any measure of improvement, the administration ruins it, by substituting the counsels which emanate from the routine of office, for individual energy and public-spirited companies.—*From a French Paper.*

CULTIVATION OF COTTON IN BRITISH INDIA.

We recently inserted a letter on this subject, copied from the *Manchester Guardian*, and bearing the signature of a Mr. Browne. We have been called upon to give, as an act of justice, the rejoinder of Mr. Tuckett, which we reprint verbatim.

To the Editor of the *Manchester Guardian*.

Sir,—I have only to-day seen a copy of your paper, wherein Mr. Browne, in giving some information to the Chamber of Commerce, has done me the honor to name me. Mr. Browne is there reported to have expressed his astonishment at my assertion, that good roads do exist in India; and, by way of controverting such assertion, gives a glowing description of a hill pass, 2,000 or 3,000 feet above the level of the sea. In Ireland there are what they call bog roads, and in Scotland there are many impassable passes, and in Devonshire there are long lanes; but still the existence of these does not prove that the Great North Road, and the Exeter

Road, and the Holyhead Road, and the Manchester and Birmingham Railroads, are mere ideal roads. They have bad roads in England as well as good ones, and there are good roads in India as well as bad ones. I will, with your permission, afford a new idea to Mr. Browne. In India the roads are so bad, that a large portion of the produce is obliged to be transported on the backs of goats. There, this beats the bullocks of Mr. Browne out and out. The Himalaya Mountains are in India; the practice exists in the Himalayas: therefore the produce of India is carried on the backs of goats. I can only say, if Mr. Browne is a good workman in the saddle, I shall be happy to point out roads where he can do his 14 miles an hour. A hackney or cart travels with four bullocks from Calcutta to Meerat, a distance of 960 miles by land, in 60 days, carrying about two tons of goods. Having resided 15 years in Upper India, I make the statement from my own actual knowledge.

Whilst on this subject, I may as well mention, that the assertions which have been lately made, in regard to the East India land-tax, are decidedly incorrect; and in opposition to what has been stated by parties, I most positively assert—

That the land revenue of India is not levied in kind on an annual assessment of the actual amount of crop.

That the revenue is taken in money.

That the assessment is on the capabilities of the soil, without reference to what the crop may be, either as to amount or quality.

That at least two-thirds of the land is under either the *perpetual settlement* effected by Lord Cornwallis, or lease of thirty years,—the population amounting to *seventy-two millions*.

The gentlemen who have been lately affording information (?) on the Indian land tax either were aware of these facts, or not. If the latter, they should have studied the subject previous to making their statements; if the former, they have deceived you.

I hope, in a short time, to be able to place a short account of the revenue settlement of India before the public, until when I hope they will suspend their judgment.

If the landlords of England had to pay out of their rents the whole of the taxes of England, would the people of England be oppressed by such a regulation? The government of India is the landlord, and pays all the expenses; there being no other tax.—Your obedient servant,

HARVEY TUCKETT.
London, 29, Poultry, Dec. 14, 1839.

We take this opportunity of directing public attention to a volume recently published, entitled "The Indian Revenue System as it is." It is replete with the most valuable information relating to India, and proves to a demonstration, that the land-tax in India is not now of that oppressive nature which has been represented; nor such as to prevent our successfully cultivating *good* cotton, suitable for the British market, upon the application of British skill and capital.

THE WAGES OF LABOR IN POLAND AND THE UNITED KINGDOM.

The government statistical tables, which are arranged and published under the superintendence of Mr. Porter, of the Board of Trade, and as such known by the name of "Porter's Tables," contain much valuable information on the rate of wages and the price of food, as well in the United Kingdom as in several places on the continent, and by which we are enabled to compare the condition of the working classes in each country respectively.

Before we enter on the question, we would premise, that in every comparison of the wages of labor between different countries, three things are

to be taken into consideration—the skill, the energy, and the perseverance of the workmen of each country respectively.

By means of the first, the work is of better quality.

By the second, more work is done in the same period of time.

And by the third, there is really a longer endurance of labor in the same period of time, because there is less of pause, and the intervals of temporary rest and cessation from labor are shorter.

Now, in all the qualities we have mentioned the English workman in the general run is superior, we believe, to the workman of most other nations, and either he turns out better work in the same space of time, the quantity being the same, or he does more work in the same space of time, the quality being the same; or, finally, he exceeds both in quantity and quality—all this, according to circumstances, and the nature of the work.

In his report, Mr. Jacob estimates the superiority of the English over the foreign agricultural laborer at one-third; and in skilled labor there is probably the same, and, perhaps, even a greater difference.

We would further observe, that whatever the nominal (money) wages of labor, yet so large a portion of the workman's wages being expended in the purchase of the necessities of life, the real wages of labor will always be in a compound ratio of the amount of money wages and the price of food; so that, whatever the amount in money, that man will always receive the highest real wages who is able to command the greatest quantity of food.

All this being premised, we come now to the facts which are to form the groundwork of our comparison.

In part 4, page 472, of the Government tables, we find that the wages of a journeyman carpenter of the first class at Warsaw, in Poland, are 6 florins per day, and that the value of the florin is 6d., and therefore, when reduced into English money, the wages of a journeyman carpenter at Warsaw are 3s. per day.*

It also appears, from page 471 of the same part 4, that the average price of wheat at Warsaw from 1825 to 1832, both inclusive, was 23s. 1d. per quarter.

We come now to the wages of labor in the United Kingdom.

From page 376 of the same tables, it appears that the wages of a carpenter at Greenwich Hospital are 5s. 5d. per day, with a reduction of 10 per cent., which lowers them to 4s. 10d. per day. And to avoid the fraction, we shall set down the wages of a journeyman carpenter of the first class in London at 5s. per day, and this it certainly does not exceed.

It further appears from the Government tables, that the wages of a carpenter in other parts of the United Kingdom are as follow:—

At Manchester, 24s. per week, or 4s. per day. See part 2, page 101.

At Glasgow, 2s. 4d. per day. See part 2, page 107.

At Londonderry, 16s. per week, or 2s. 8d. per day. See part 2, page 120.

And, finally, it appears from the *Times* journal of the 15th of November, 1839, that the wages of a carpenter at the Welch Ironworks are 21s. per week, or 3s. 6d. per day.

These are, then, the rates of wages for a journeyman carpenter in England, Wales, Scotland, and Ireland.

We come now to the price of wheat in England, and then, taking the same period as for the price at Warsaw, we find from the Government tables, part 3, that the average price of wheat in England from 1825 to 1832, both inclusive, was 6s. 1d. per quarter.

We have set forth in the following table the wages of various classes of artisans at Warsaw, and which

* The wages of a master-carpenter are 9 florins, or 4s. 6d. per day. This is probably the head workman or superintendent.

are taken indifferently from the same Government tables, in part 4, page 472.

Class of Artisans.	Polish money.	English money.
Clothworkers	fl. gr.	l. d.
Clothing-makers	4 0	2 0
Stocking-makers	2 15	1 3
Cotton-weavers	3 0	1 6
Silk-weavers	4 0	2 0
Glovers	5 0	2 6
Ropemakers	4 0	2 0
Dyers	5 0	2 6
Pewterers	9 0	4 6
Mechanics	12 0	6 0
Paviors	4 0	2 0
Shoemakers	4 0	2 0
Tailors	5 0	2 6
Carpenters	6 0	3 0
Leatherdressers	4 0	2 0
Soapmakers	4 0	2 0
Tanners	3 0	1 6
Masons	6 0	3 0

The rate of wages at Warsaw, it will be seen by the above table, is considerably higher than in England, when estimated by the quantity of corn the relative amounts will purchase in the two countries.

It is this high rate of real wages that induces the German mechanics and artificers to flock to Poland, where they make money, and then return to their own country. For this fact we have the authority of Mr. Jacob.

We have omitted, in the preceding article, the calculations of the writer, founded on the different prices and qualities of corn in England and Warsaw, because the comparisons are evidently founded in error. As a proof of this, we need only mention that the writer states, as the result of his calculations, that the Warsaw carpenter, who earns three shillings a day, actually receives 7s. 4d. per day more than the London carpenter; to establish this, it would be necessary to prove that the London carpenter pays 5s. 4d. a day for the pleasure of working, yet the writer assumes that he is actually paid in coin 5s. a day.

EXPIRED PATENTS.

A LIST OF PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING JANUARY 25, 1840.

ENGLAND.

JOHN FREDERICK SMITH, Dunston Hall, Chesterfield, an improvement in the process of drawing, roving, spinning, and doubling wool, cotton, &c., Jan. 19.

WILLIAM WHITFIELD, Birmingham, improvements in making or manufacturing handles for saucepans, kettles, and other culinary vessels, and also tea-kettle handle straps and other articles, Jan. 19.

BENJAMIN COOK, Birmingham, brass-founder, improvements in making or constructing hinges of various descriptions, Jan. 19.

ABRAHAM ROBERT LEORENT, Gottenburgh, and King-street, Cheapside, a method of applying steam, without pressure, to pans, boilers, coppers, stills, pipes, and machinery, in order to produce, transmit, and regulate various temperatures of heat in the several processes of boiling, distilling, evaporating, insipitating, drying, and warming, and also to produce power, Jan. 19.

SIR ROBERT SEPPINGS, Somerset-house, London, an improved construction of such masts and bowsprits as are generally known by the name of made masts and made bowsprits, Jan. 19.

ROBERT STEPHENSON, Bridgetown, Warwickshire,

engineer, axletrees to remedy the extra friction on curves to wagons, carts, cars, and carriages to be used on railroads, tramways, and other public roads, Jan. 23.

A LIST OF PATENTS SEALED FROM JANUARY 1ST TO 28TH, 1840.

(Continued from Page 306, Vol. 1.)

ENGLAND.

JOHN LEO NICOLAS, of the parish of Clifton, Bristol, gentleman, for certain improvements in the method of constructing and propelling carriages on railways or common roads, and through fields, for agricultural purposes.—6 months, Jan. 1.

SAMUEL LAWSON, of Leeds, and JOHN LAWSON, of the same place, engineers and co-partners, for improvements in machinery for spinning, doubling, and twisting flax, wool, silk, cotton, and other fibrous substances.—6 months, being a communication, Jan. 2.

CHARLES GREENWAY, of Douglas, in the Isle of Man, Esq., for certain improvements in reducing friction in wheels of carriages, which improvements are also applicable to bearings and journals of machinery.—6 months, Jan. 3.

JOHN FRANCOIS VICTOR FABIEN, of King William-street, in the city of London, gentleman, for improvements in pumps.—6 months, Jan. 7.

DAVID LOW, of Adam's-court, Old Broad-street, merchant, for improvements in machinery for crushing, preparing, and combing flax, hemp, phormium tenax, and other fibrous substances.—6 months, being a communication, Jan. 7.

MOSES POOLE, of Lincoln's Inn, gentleman, for improvements in obtaining power.—6 months, being a communication, Jan. 7.

JOHN RIDGEWAY, of Cauldon-place, Stafford, china manufacturer, for an improvement in the moulds used in the manufacture of earthenware, porcelain, and other similar substances, whereby such moulds are rendered more durable.—6 months, Jan. 11.

JOHN RIDGEWAY, of Cauldon-place, Stafford, china manufacturer, and GEORGE WALL, the younger, of the same place, gentleman, for certain improvements in the manufacture of china and earthenware, and in the apparatus or machinery applicable thereto.—6 months, Jan. 11.

JOHN RIDGEWAY, of Cauldon-place, Stafford, china manufacturer, and GEORGE WALL, the younger, of the same place, gentleman, for certain improvements in the mode of preparing bats of earthenware and porcelain clay, and of forming or shaping them into articles of earthenware and porcelain, and in the machinery or apparatus applicable thereto.—6 months, Jan. 11.

ROBERT MONTGOMERY, of Johnstone, in the county of Renfrew, gentleman, for an improvement or improvements in spinning machinery, applicable to mules, jennies, slubbers, and other similar mechanism.—6 months, Jan. 11.

CHRISTOPHER EDWARD DAMPIER, of Ware, attorney at law, for an improved weighing machine.—4 months, Jan. 14.

HEZEKIAH MARSHALL, of the city of Canterbury, architect, for improvements in window sashes and frames, and in the fastening of window sashes.—6 months, Jan. 14.

ARTHUR ELDRED WALKER, of Melton-street, Euston-square, engineer, for improvements in engraving by machinery.—6 months, Jan. 18.

CHARLES WHEATSTONE, of Conduit-street, Hanover-square, Esq., and WILLIAM FOTHERGILL COOKE, of Sussex-cottage, Slough, Esq., for improvements in giving signals and sounding alarms at distant places by means of electric currents.—6 months, Jan. 21.

SAMUEL BROWN, of Finsbury-pavement, civil engineer, for improvements in making casks and other vessels of, or from iron and other metals.—6 months, Jan. 21.

JOSEPH ROCK COOPER, of Birmingham, gun maker, for improvements in fire arms, and in the balls to be used therewith.—6 months, Jan. 21.

WILLIAM STONE, of Winsley, gentleman, for improvements in the manufacture of wine.—6 months, Jan. 21.

JAMES HALL, of Glasgow, upholsterer, for improvements in beds, matresses, and apparatus applicable to bedsteads, couches, and chairs.—6 months, Jan. 21.

ARTHUR HOWE HOLDsworth, of Brookhill, Devon, Esq., for improvements in preserving wood from decay.—6 months, Jan. 21.

WILLIAM COLTMAN, of Leicester, framesmith, and JOSEPH WALE, of the same place, framesmith, for improvements in machinery employed in making framework knitting, or stocking fabrics.—6 months, Jan. 21.

SAMUEL WILKES, of Darlestone, iron-founder, for improvements in the manufacture of hinges.—6 months, Jan. 21.

GEORGE WILSON, of Saint Martin's-court, Saint Martin's lane, an improved paper-cutting machine.—6 months, Jan. 21.

CHARLES ROWLEY, of Birmingham, stamper and piercer, and BENJAMIN WAKEFIELD, of Bordesley, machinist, for improved methods of cutting out, stamping, or forming and piercing buttons, shells and backs for buttons, washers, or other articles from metal plate, with improved machinery and tools for those purposes.—6 months, Jan. 21.

EDWARD HALLILEY, of Leeds, cloth manufacturer, for improvements in machinery for raising pile on woollen and other fabrics.—6 months, Jan. 21.

WILLIAM HUNT, of the Portugal Hotel, Fleet-street, London, manufacturing chemist, for improvements in the manufacture of potash and soda, and their carbonates.—6 months, Jan. 21.

MILES BERRY, of Chancery-lane, patent agent, for certain improvements in the manufacture of prussiate of potash and prussiate of soda.—6 months, being a communication, Jan. 21.

JULES ALPHONSE SIMON DE GOURNAY, of Bread-street, London, gentleman, for improvements in the manufacture of horse-shoes.—6 months, being a communication, Jan. 22.

GEORGE CLARKE, of Manchester, manufacturer, for certain improvements in the construction of looms for weaving.—6 months, Jan. 23.

ALEXANDER HELT, of Gower-street, Bedford-square, surgeon, for certain improvements in the arrangement and construction of fire-grates or fireplaces, applicable to various purposes.—6 months, Jan. 23.

JAMES BINGHAM, of Sheffield, manufacturer, and JOHN AMORY BODEN, of the same place, manufacturer, for certain improved compositions, and are made to resemble ivory, bone, horn, mother of pearl, and other substances applicable to the manufacture of handles of knives, forks, and razors, piano-forte keys, snuff-boxes, and various other articles.—6 months, Jan. 23.

THOMAS AITCHEN, of Chadderton, Lancaster, manufacturer, for certain improvements in the machinery or apparatus for drawing cotton and other fibrous substances.—6 months, Jan. 28.

JAMES SMITH, jun., and FRANCIS SMITH, of Spital Works, near Chesterfield, lace-manufacturers, for certain improvements in machinery for the manufacture of figured bobbin net or lace.—6 months, Jan. 28.

WILLIAM PONTIFEX, of Shoe-lane, London, copper-smith, for an improvement in treating fluids containing coloring matter, to obtain the coloring matter therefrom.—6 months, Jan. 28.

HENRY CURSON, of the Borough of Kidderminster,

machinist, for certain improvements in steam-engines.—6 months, Jan. 28.

JOHN WHITEHOUSE, of West Bromwich, Stafford, iron-master, for improvements in preparing and rolling iron and other metals, or metallic alloys, for the manufacture of certain articles of commerce.—6 months, Jan. 28.

WILLIAM MATTERSHAW FORMAN, of Sheepshard, Leicester, framesmith, for certain improvements in stocking-frames and machinery used in frame-work knitting.—6 months, Jan. 28.

ON THE PUBLICATION OF SPECIFICATIONS.

In our last number, we inserted a letter from a correspondent, bearing the signature of "J. D.", animadverting in strong terms upon the publication of specifications in the "INVENTORS' ADVOCATE." The answer we promised our correspondent, has not reached us in time for insertion in the present Number, but it shall appear in our next.

In the mean time, we wish it to be distinctly understood, that nothing contained in our correspondent's letter alters our conviction of the usefulness to inventors, of an immediate publication of specifications.

We do admit, after mature examination of the question, that in many cases it is a hardship upon a patentee to publish his specification, without giving him some previous notice, and that if he should be unacquainted with the practice of our Journal, its appearance, without such notice, may take him by surprise.

This is the only case in which we can discern the slightest injury resulting from the useful practice we have made a leading feature of our publication; and with the frankness we shall ever make it a rule to display, we admit that our zealous correspondent in calling our attention to so momentous a question, has done good service to the cause which he professes it to be his wish to unite with us in upholding. In order to afford a remedy for the evil, which the prompt publication of specifications might in some cases inflict upon inventors if they were not previously informed that such is the practice of our journal, we have organised a plan which will at once obviate all cause for even this complaint. We intend, from to-day, to give notice publicly in the "INVENTORS' ADVOCATE," and privately to each patentee, individually, one month before the date for the enrollment of his specification, that such specification will be published by us immediately after its enrollment; and, in order to place all patentees from the time of our forming this determination, on the same footing, we have kept back the specifications which were prepared for our last and present numbers, and shall do so with all others for the next two weeks. We conceive that, by this mode of action, it will be seen (whatever may be the opinion of our correspondent "J. D." to the contrary) that we are in every point of view the Inventor's friend, and that we are pursuing a course whereby we at once reconcile the performance of our duty to the public, and particularly to inventors as a body, with a due regard to the private interests of individual inventors.

(To the Editor of the "Inventors' Advocate.")

Sir,—In your paper of this day, there is a letter from J. D., complaining of what is undoubtedly the most original feature of your paper, the short

weekly account of the specifications enrolled. Though a patentee myself, and a poor one, who would be glad to take patents for my inventions in every country, yet I cannot agree with J. D. How many men are engaged in spending their time and means in re-inventing matters, some long since, and others but recently patented, simply for want of such a paper as yours to tell them what has been done! As you have, for a second time, omitted a weekly list, I cannot but suspect you may be induced to give the early publication of specifications up; in which case, though I do not yield one jot to J. D. as a well-wisher for the success of the "Inventors' Advocate," yet I beg to say, I, for one, would not take a second number if that feature of your paper is to be dropped.

Instead of allowing the lock up the specifications in the different offices in Chancery, which is in fact the case, to persons, who like me, live a distance from London, I should expect the legitimate employment of an Inventors' Advocate would be to press on the parliament and influential men the necessity of simplifying the method of taking out patents, reducing the stamps, and lessening the fees; then, indeed, you would deserve the title you have assumed.—I am, Sir,

Bristol, Yours, &c.,
25th Jan. 1840. T. B.

(To the Editor of the "Inventors' Advocate.")

Sir,—In your paper of Jan. 25th, I see a letter from a correspondent on the "publication of specifications;" would you be kind enough to answer me the following questions, and you will particularly oblige?

Do you intend giving up entering the specifications in your valuable journal, as they are entered weekly in the offices; if so, please to name in your next number where I can obtain any one I may want, and the cost I shall have to be at in obtaining a knowledge of any PATENTED invention, so as to be enabled to judge whether one that I am experimenting upon is similar, and so prevent me taking out a patent. It would greatly oblige many of your subscribers, if you discontinue entering specifications, to give every week a list of those specified in each office.

Your obedient servant,
A. X. L.

PATENT LAW.—FRANCE.

LAW OF PATENTS REVISED.

We feel great pleasure in copying the following remarks from the *Courrier Français*, on the French patent law, which is, in many points, as defective as our own. We purpose exposing the abominable abuses of the patent laws in every country, and shall never feel we have done our duty till we see that a uniform system be introduced, affording full protection to inventors, and harmonising with each other.

"At the close of the legislative session of 1838, a petition was presented to the Chamber of Deputies, praying for a revision of the laws relative to patents.* This petition, which pointed out the very great difficulties so long entailed upon men of genius, who devote their lives to the prosecution of useful discoveries, and the insufficiency of the present enactments on the subject, elicited a reply from the then minister of commerce. He ascended the tribune, and announced to the Chamber that the difficulties referred to had long attracted the attention of the administration; and that legislative measures were in contemplation to remedy those evils which experience had proved to exist in the

* Decrees of 31st December, 1790, of 7th January and 26th May, 1791; and resolution of 27th September, 1800. (5, Vendémiaire, in the year 9.)

patent laws. He added that a bill (*projet de loi*) on the subject had been prepared, which he should submit to the consideration of the Chamber at the beginning of the next session.

These words were hailed with hope and confidence by all inventors, who looked forward to a law which should enable them to obtain patents for their inventions, both at home and abroad; which should prevent their being robbed of the fruit of their labors, by the drones of the industrious hive; and which, lastly, should insure them a long enjoyment of the property created by their industry, and therefore entitled to protection.

The promised law, however, remained in the ministerial portfolio, and interests of the first importance lie in abeyance through this forgetfulness. We are willing to believe that the subject will not be neglected by the present ministry."

FOREIGN CORRESPONDENCE.

HOLLAND AND FRANCE.

TREATY OF COMMERCE BETWEEN HOLLAND AND FRANCE,

"Holland," says the *Ami de l'ordre*, "is making advances to France; and has proposed to conclude a treaty of commerce and navigation that shall be equally advantageous to both parties. A negotiation has been opened at Paris, the principles on which it is to be founded are agreed upon, and the details only remain to be settled. The *Journal des Débats* speaks highly in favor of this negotiation, considering that Holland offers a good market for the fancy goods of Paris, and the wines of France. So far there is in the proposed treaty nothing that can be considered unfavorable to us; but we must take care: Rouen and Mulhouse, rich and indefatigable producers of cotton manufactures, would prove formidable rivals to Ghent, should they come into collision in the market of Java. It is true that the manufacturers of Mulhouse are not in a condition to furnish the goods peculiarly suited to the Dutch colonies; but if so valuable a market were opened to them, it would not be long before they would take measures to secure the exclusive possession of it. If to trade with France is advantageous to Holland, to trade with us would be equally advantageous to her. We can supply her with coals, iron, and stone, with arms, and with all sorts of woven goods, &c., &c.; and take from her in return, coffee, of which our consumption is at present considerable, and can be increased; flax, which must be wanted by our weavers, since they wish the exportation of it to be prohibited; raw cotton, which is now principally imported from France, England, and the United States; and lastly, whatever tropical productions we stand in need of. The necessity of a treaty of commerce with Holland is so self-evident, that we shall not stop to insist upon it; but we must make haste, unless we would see our competitors exclusively possessing the ground which it is our interest, as well as theirs, to occupy."

These views of the *Ami de l'ordre* appear to be well founded, and the Belgian government should be urged to open without delay negotiations for a commercial treaty with Holland on the north, and France on the south, which latter power must begin to feel the necessity of forming a counterleague to the Germanic league. Their enterprises of industry extend to the Rhine; it is proposed to establish a number of manufactures on the banks of this fine river, which will open to them not only the markets of Germany, but the markets of the whole world by means of the sea. It is time for France to reflect; her manufactures, hidden in the interior of a country without railroads, and without any good means of conveyance, must inevitably decline, or emigrate. She must dread, if she does not take care, the fate of the country of Archimedes, where not even a press is now to be found. Agriculture may flourish when limited in extent, but the arts of industry and commerce require space; they require the range of the world.

BELGIUM.

M. NOTHOMB'S REPORT ON THE RAILROADS.
(Concluded from No. 24.)

When the total amount of expense for the 110 leagues shall be ascertained, and the question of the double or single way of line decided, then it will be more easy to state accurately the capital expended for rails and *materiel*, and to calculate the interest which should be allowed for it. Meanwhile our reasoning is founded on the 47 millions already expended, taking all circumstances, even the most minute, into consideration. Our object is rather to furnish data for the means of judging in future, than to give a final judgment on what is past.

RECEIPTS.

The Receipts arise from three distinct sources:—
Passengers, Baggage, Merchandise.

The total amount received from the year 1835, to the 1st October, 1839, is as follows:—

	Francs.	Cents.
1835 (8 months)	286,997	50
1836 (2 sections)	825,132	85
1837 (3 and afterwards 6 sections)	1,416,982	94
1838 (6, 8, and 10 sections)	3,097,833	40
1839 (9 months—10 and 13 sections)	3,150,999	99
Total	8,759,946	68

For the year 1839 the receipts are divided as follows:—

	Francs.	Cents.
1. Passengers	2,774,671	—
2. Baggage	99,371	79
3. Merchandise	276,957	20
Total	3,150,999	99

In 1835 the number of passengers was 421,439
1836 871,307
1837 1,384,577
1838 2,238,303
1839 (during nine months only) .. 1,506,457

Total 6,422,083

In 1837, the baggage produced only 16,994 frs. 36 cents.; in 1838, 103,421 frs. 39 cents.; and in the first nine months of 1839, 99,371 frs. 79 cents.

The progressive increase in the receipts for merchandise is more striking, and more satisfactory, if we consider the future. In 1838, they amounted only to 58,594 frs. 28 cents.; whilst, on the 30th September, 1839, they were 276,957 frs. 20 cents. This sum was paid for the carriage of 26,624,015 kilogrammes.

The railroad administration cannot be recommended too strongly to improve this department by every means in their power. It has been repeated over and over again, that the carriage of merchandise alone would cover the expenses of railroads. This is not positively true. But there are countries where this ought to be the case, and Belgium is one of them. We observe with pleasure the progress made in this branch in 1839, and hope it will go on and prosper.

The following is the provisional rate of charge that has been fixed for merchandise.

Under 1,000 kilogrammes weight, (about 18 cwt.), 4 centimes for every 100 kilogrammes (200 lbs.) per kilometer, (three quarters of a mile), that is about 40 centimes a ton.

Above 1,000 kilogrammes weight, 13½ cents. per ton for all kinds of goods indiscriminately.

Carriage of wagons, &c., 18 cents per ton.

Before dismissing this part of the subject, we must notice what we consider to be a serious omission. There is no mention made of the Post Office in the receipts; yet the transmission of letters by the railroad must have effected a saving in this department. At all events the sums received and

paid under this head should have been stated; for though the money may be taken from one hand to be put into the other, the accounts are not regular without such a statement.

RECEIPTS AND EXPENSES.

As we before observed, the minister has struck his balance without taking into account either the interest of money, or any fund to provide for the renewal of the *materiel*, &c. Yet these things ought not to be overlooked; they are a simple matter of calculation.

YEARS.	BALANCE.	
	Francs.	Cents.
1835 (8 months)	100,224	77
1836	403,997	18
1837	32	—
1838	295,994	47
1839 (9 months)	354,665	47
Total	1,241,993	21

YEARS.	EXPENSES.	
	Francs.	Cents.
1835 (8 months)	168,772	73
1836	431,135	67
1837	1,189,988	62
1838	2,733,167	93
1839 (9 months)	1,889,006	52
Total	6,422,071	47

The table of receipts and expenses is as follows:—

This balance of 2,337,875 frs. 21 cents. in favor of the receipts, does not appear to be satisfactory in every point of view. We should have thought it right to state the account differently; for a single year, for instance, 1839, we have calculated that the total expenses should be estimated at 6,150,000 frs.

We will suppose the receipts to be on an average what they have been during the first nine months, and consequently one-third of the amount received up to the 30th September, viz.:—

	Francs.	Francs.	Francs.			
Passengers.....	2,774,671	0	934,890	0	3,699,561	
Baggage	99,371	79	33,123	93	132,495	72
Merchandise.....	276,957	20	92,565	24	369,532	44

General Total..... 4,201,589 16

Deducting, then, the receipts from the expenses for 1839, we find a deficit of 1,948,410 frs. 84 cents. on the 62 leagues which are completed, or 31,265 frs. on each league. We have included in the expenses, interest at 4 per cent. on the loan, say 1,880,000 frs.; a sinking fund, say 470,000 frs.; a provision for the renewal of *materiel*, &c., 5 per cent. on the cost price, say 800,000 frs. If we suppose that the receipts and expenses of the 48 leagues in progress, will be in proportion to the receipts and expenses of the 62 leagues completed, the annual deficit, calculating 31,265 per league, will be 3,449,130 frs.

However unsatisfactory may appear the statement which we have given of the financial condition of our railroads, we are yet far from giving way to despair; on the contrary, we confidently believe that with time and experience the results will be more favorable. But we are of the number of those, few though they be, who like to look at things as they really are, who do not turn aside from a difficulty, but manfully face it, and who think, that of all illusions which hide truth, the illusions of figures are the most dangerous. We

have presented them, therefore, under their true aspect, however discouraging, trusting that each in his department will be induced earnestly to attempt the improvement of what is already good, and the correction of what is bad; and as we can bear the past with fortitude, so we look forward to the future with hope.

FRANCE.

ON THE CULTURE OF SILK.

The silk and cocoons of M. Andre-Jean of Rochelle, have attracted universal admiration. It appears that he offered an asylum to a Polish Refugee, who has repaid his hospitality by the invention of an apparatus for the arrangement of the worms on the mulberry trees. This apparatus is intended as a substitute for the imperfect methods which are now generally used in the South, and which renders the winding of the silk from the cocoon so troublesome. The worms will never be one exactly above the other, so that the lower cocoon cannot be stained or injured by any liquid substance from the worm above, and there will be no more double cocoons. M. Bronski naturally keeps his invention a secret; and will not divulge it without some indemnity from the government, who will be amply repaid by the advantages which it holds out.

The Agricultural Society of Rochelle, appointed a committee as far back as July, 1837, to inspect M. Andre-Jean's establishment, and the silk and cocoons produced by Major Bronski's *coconière*. This committee, after seeing it tried in 1837, 1838, and 1839, have made their report to the society, pointing out the immense advantages likely to be derived from it; and concluding with a recommendation to the government to treat with Major Bronski for his invention, which is of so much importance to the south of France, and to those departments where the rearing of silk-worms is carried on. The government should lose no time in following the recommendation of the committee, for M. Bronski has already received from several other countries advantageous offers, which his unfortunate position will not permit him long to refuse, and France may lose the benefit of a discovery, which would relieve her from an annual tax of sixty millions that she pays to foreigners for silk required by her manufacturers!—*Courrier de la Drôme*.

RAILWAY TRAVELLING.

(FROM A CORRESPONDENT.)

As railways are every day becoming more familiar to the public, their utility and advantages become more appreciated: they form topics of discussion to all parties, both in and out of Parliament, and as they progress they must form a subject for the legislature to regulate and control. The most recent invention consists of a new construction of machinery, by which nearly all rubbing surfaces are removed, and rolling ones introduced in their stead, and we find that its principles may be employed in vessels, fixed machinery, or on railroads, and carriages; the latter can be propelled with great swiftness with comparatively small engines, thereby effecting an immense saving in fuel; but we regret to find that the best patented inventions often lie dormant for years, and they require, as Mr. Rotche's patent did, the fostering hand of government to usher them into existence. If we are to furnish our continental neighbors with coal, for working their machinery, vessels, and rail carriages, in addition to our own consumption, surely it becomes a question how long will it last? We know that there is not an owner of a coal-mine who would not gladly see the last pit of coals emptied and turned into gold. It is not our intention to cavil about the mode of propelling vessels or carriages, whether by hand labor, steam, or

any other contrivance, but to employ our energies to introduce such means as will aid that power. Many attempts have been made to reduce friction in the axles of wheels, and many fruitless attempts have also been made to prevent the wheels of carriages and locomotives running against the rails—which has at length been accomplished—but, alas, where are we to find them? in our artisans' shop houses! not in our mines, or vessels, or on our railways.

The first attempt that was made in this country to reduce friction in the axles of railway carriages, was by Mr. Brandreth, who patented the invention in 1825. This gentleman's design was intended to lessen the friction of the ground wheel axles, by introducing anti-friction wheels in the frames of the carriages, immediately over the axles. These undoubtedly worked more freely on a straight line; but on curves, the off wheels became jammed in their axles, and likewise the anti-friction wheels were thrown obliquely in their bearings, and thus created friction where it was most desirable to remove it. That object, however, has been accomplished at last, and it bids fair to rival all its contemporaries.

Difficult as the task must be accurately to describe an invention without giving drawings, we have imposed upon ourselves that task, and we shall leave others to judge whether or not we have taken a right view of the subject:—First, a step is sunk down on the inner edges of the rails which are to be of cast iron, and fixed to the sleepers with staples, and to have double the number of joints, which joints form in themselves dovetails, but no rut is felt when the wheels pass over. The step of the rails will be so low as not to allow the flanges to touch them, except when running on the outer rail; in that case, the step would be raised by a gradual ascent, the fore-wheel would work six feet on the step of the rail, and thereby gain one and a half inches before the hind wheel would reach it; both wheels with their axles, being then thrown into right angles with the curve, will run upon the step, and keep pace with the inner wheel. Thus the curves are made to act upon the axles, and to cause them with their wheels to expand on the off side, and contract on the inside, room being allowed in the grooves where the axles and collars work, to shift their position.

The means by which the axles are forced obliquely when working the curves, are thus described:—All the collars in which the axles work have bars attached to them, top and bottom, with holes in their centre, in which pivots are fitted, and attached to cross-stays beneath and above, on which pivots they work like so many hinges. A pair of arms are fastened to the collar-bars, and meet together in the centre, between the axles, forming a union or knuckle joint, like the knuckle of a man's hand when butted together, which forces the axles, when working a curve either way, more distant on the off rail, and closer together on the inner rail, and thus all side friction between the flanges of the wheels and the rails, and the dangers attendant thereon are avoided. A four-wheel carriage or locomotive might thus be made to work a curve as correctly as an ordinary carriage will now work a straight line. Carriages having but two wheels on the rails, would not require either moveable axles, collar-bars, or knuckle joints; they will form any curve from the mode in which they are connected, and work it perfectly correct with the step rail, and they are as simple in this construction as any carriage that is made, and if fifty carriages formed a train, and they were worked by steam, one four wheel carriage only need be employed in the rear, providing the locomotive had traversing axles also. We do not stop to inquire who is the inventor of the step rail, nor who first introduced a plan by which twelve wheels are thrown instantaneously more distant in the outer curve, and closer together on the inner one, to accommodate the off wheels which are losing ground every inch when working curves; nor do we stop to inquire who first discovered the necessity of making the off-wheels

larger than the inner wheels when working the outer circle of a curve. It is enough that we have seen them, and that they are the sole production of one individual.

Moreover, we have seen carriages on this principle with an immense burden, and four ounces were as capable of propelling it with the patent-wheels, as forty with the common wheels; one fourth of the power propelling ten times greater weight than the carriage up an incline of one in 400—more with patent than with common wheels.

Such is the amount of friction in the axles alone, if such be the fact; and thousands must have witnessed it as well as ourselves. Surely this subject well deserves the attention of the legislature. A public company too would find the above one of the most profitable sources of creating wealth that this country produces.

We have been on many railroads, but we never yet saw a single yard of rail, nor a single locomotive, or carriage, possessing one of the least of those properties. When these impediments are removed, we may travel on a railroad fifty miles in one hour with greater safety than we can now twenty. We are at a loss to account for the apathy not only of the directors of railways, but of the government themselves, who may, even within the area of Trafalgar-square, lay down rails and convince the whole world in a few months, long ere their statues will be ready, what may be done to facilitate speed, and aid the progress of railroads.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

COMMITTEE ON RAILWAY TRAVELLING.—Mr. E. J. STANLEY gave notice, that on the 28th instant, Mr. Labouchere would move for the appointment of a select committee, to inquire into railway travelling.

THE GLOUCESTER AND BIRMINGHAM RAILROAD appears to be silently progressing towards completion, and the preparations for opening some portion, at least, of the line are daily becoming more manifest. One of the new American engines has been lately placed upon the line, and, within the last few days, has made several experimental trips between Cheltenham and Tewkesbury, performing the distance of nine miles in thirteen minutes. At present, everything augurs well for the success and prosperous accomplishment of this important undertaking.—*Cheltenham Looker-On.*

AYLESBURY RAILWAY.—It is intended to start the first train from Aylesbury at seven in the morning, to give opportunity for persons going to Birmingham and other places northwards by the six o'clock London train, which will stop at Cheddington for that purpose. This will enable parties to reach Manchester and Liverpool by four in the afternoon, which is previous to the departure of the Irish vessel's.—*Aylesbury News.*

NORTH MIDLAND RAILWAY.—The works in the neighborhood of Belper are rapidly progressing, and in several portions the men are working night and day. The permanent way is also progressing very fast. The Derby station is driving on with all speed; and the Leeds station, the letting of which had been postponed, will be let in the course of a week.—*Derby Mercury.*

A NEW COUNTY.—**MORECAMBE BAY RAILWAY.** By the intended inclosure of Morecambe Bay and the Duddon Sands, fifty-two thousand acres of land will be reclaimed, which will form two of the most beautiful valleys in the lake districts of 83 square miles. "The sands, being composed almost entirely of calcareous matter washed from the surrounding limestone, are capable of being formed into the most fertile soil for agriculture." The fertility of these sands has been fully proved by J. Stockdale, Esq., of Cark, in a series of very able letters. The land proposed to be reclaimed will form an area of half the size of Rutlandshire, and,

calculating one individual to two acres, will accommodate a population of 26,000, being about half the number of the present population of the counties of Huntingdon and Westmoreland, and five thousand more than that of Rutland. It would be about equal in population and extent to Lonsdale North, which is a peninsula lying between the two bays, (Morecambe and the Duddon,) on which stand the ancient ruins of Furness Abbey, and is also a rich agricultural and manufacturing district abounding with slate, iron, and copper mines. By the re-claimed land being added to it, Lonsdale North would form one of the most pleasant and compact counties in the kingdom.—*Lancaster Guardian.*

A meeting of the Directors of the Maryport and Carlisle Railway was held at Aspatria on Saturday week, at which the first report of Mr. Blackmore, the new engineer, was read; and from which it appeared that about seven miles of the line will be ready for the conveyance of lime and coals in the month of April next. We were also told that arrangements were entered into with the owners of coal pits along the line, and from a calculation made it is expected that full ten per cent. upon the expended capital will be realised by this traffic alone.—*Carlisle Journal.*

VICE-CHANCELLOR'S COURT, WESTMINSTER HALL, January 14, 1840.—ILLINGWORTH v. THE MANCHESTER AND LEEDS RAILWAY COMPANY.—JUDGMENT.—On an application to dissolve an injunction which had been obtained in this case on an *ex-parte* statement, the Vice-Chancellor gave judgment to the following effect:—"It seems to me that the proposed diversion of the river Calder is lawful under the 27th section of the 7th of William the Fourth, if the Calder and Hebble Company give their consent. In this cause they are not parties; and as against the plaintiffs, my opinion is, that the railway company lawfully may divert the water in the manner proposed, and the court ought not to interfere to prevent them from so doing, especially as it is proved a notice and plan, showing what land was required for the diversion of the river, was served on the 16th of April, 1838, and the plaintiffs must of necessity have been aware of the excavations from the time they began, and long before the 3d of October, 1839, on or about which day, as the bill very unfairly states, it became apparent that the defendants intended to divert the course of the river; therefore the first part of the injunction ought to be dissolved.—With respect to the second part of the injunction, it is extremely difficult to say whether the proposed new road is or is not as convenient, or as near thereto as may be, as the old Jacob Road, having regard to all circumstances. But when I see that the proposed new road corresponds with the second alternative mentioned in the memorandum made in January, 1837, and left with the plaintiff, Mark Stephenson; and when I find that the railway company's works have been carried on since March, 1838, and that no complaint was made till October, 1839, I cannot think this court ought to interfere. I have not the least doubt that, long before the 3d of October, the plaintiffs, or some of them, knew what the defendants intended to do; and when I consider Mr. Wilby's affidavit respecting the boiler, and the unfair and untrue allegations that the company's works are done to save them from expenses, and that the cutting on the banks of the river will be a deviation, and that no complaint is made till after the time had expired for enabling the defendants to compel a sale of land to them, I cannot help regarding the plaintiffs' case as one not to be supported in equity.—With respect to the temporary road, it is a remarkable fact that the notice set forth in the bill made no complaint in respect of it; if the road had been improper, and the engineer had been informed thereof prior to the filing of the bill, he might have taken adequate measures to have made the same proper and sufficient, without any application to a court of equity. I think that no application for an injunction ought to have been made, and that the injunction must be dissolved, with costs."

GREENWICH RAILWAY.—Copy of an Inscription on a Silver Chalice presented to Mr. G. Walter:—

"To GEORGE WALTER, Esq.—To whose exertions the inhabitants of Deptford owe the commencement of the London and Greenwich Railway, by the completion of which magnificent undertaking the convenience and prosperity of their town has been largely promoted."

FRANCE.—The municipal council of Havre has made a proposition to government for forming a line from Paris to Havre. It is proposed to confide the consideration of the measure to a committee named by the council, and to invite the chamber of commerce to act in concert.

FRANCE.—The directors of the Paris and Orleans railroad have requested government to guarantee a sum, at the lowest rate of interest, to cover the whole expenses of the undertaking, instead of limiting them to a fixed capital of 40,000,000, with a condition annexed that government should advance money at 4 per cent. to meet the expenses exceeding the original capital. The railway commission, however, do not concur, and the minister of public works is of their opinion; but as the commissioners are favorable to the principle of guaranteeing sums at the lowest interest, an application will be made to the chambers to guarantee 40,000,000, so that the company may be in a condition to complete the line.

RAILWAY SYSTEM OF GREAT BRITAIN.

(Continued from our last.)

In our last, we mentioned the first Railway Company incorporated in Great Britain by Act of Parliament; we now proceed to enumerate and describe those that have followed, down to the present time, under the heads of their respective commencing years.

1801.

THE SURREY IRON RAILWAY COMPANY, as already stated.

1802.

THE CAERMARTHENSHIRE RAILWAY OR TRAMROAD COMPANY, for making and maintaining a railway or tramroad from the Flats, in the parish of Llanelli, in the county of Caermarthen, to certain lime-works, called Castell-y-Gareg, in the parish of Llanfihangel-Aberbythick, in the said county; and for making and maintaining a dock or basin at the termination of the said railway, at or near the said place called the Flats.—Length, 16 miles.—Chief use, conveyance of limestone, coal, and iron. Also, connected with the above, **SIRHOWEY TRAMROAD**, from the Monmouthshire canal at Newport, through Tredegar Park, to Sirhowey Furnaces.—Length, 11 miles.—Chief use, conveyance to Monmouthshire canal of produce of Tredegar Iron Works.—Capital allowed to be raised by company, £45,000.

1803.

THE CROYDON, MERSTHAM, AND GODSTONE RAILWAY, meant as a continuation of the Surrey Railway, first described, from the west of Croydon, by the side of the Brighton road, to Merstham, and thence to the town of Reigate, with a branch from Merstham to Godstone Green.—Length of whole, 15½ miles.—Cost £90,000. Railway double line throughout, with pathway at each side, 24 feet wide. Chief use, conveyance of coal to, and goods, &c. from, London.

1804.

THE OYSTERMOUTH RAILWAY, from Swansea, at the termination of the Swansea canal, to Oystermouth.—Length about 6 miles. A branch (length not stated) on west side of canal, from same place to Morriston. Capital, £12,000.—Chief use, conveyance of minerals.

1808.

[Note.—When years are omitted, as is here done, it signifies that no new undertakings characterised those passed over.]

THE KILMARNOCK RAILWAY, to run between the

towns of Kilmarnock and Troon, both in Ayrshire.—Length, 9½ miles.—Capital, £40,000.—Object, conveyance of coal, limestone, and merchandise.

1809.

THE BULLO PILL, OR FOREST OF DEAN RAILWAY, from the river Severn, near the town of Newnham, to the summit of the hill above Churchway Engine, in the Forest of Dean, Gloucestershire; with three short branches to different coal mines in said Forest.—Length, about 7½ miles.—Capital, £125,000.—Chief use, carriage of timber, coal, iron ore, &c.

THE SEVERN AND WYE RAILWAY, from Lidbrook on the Wye, to Lower Verge, both in Gloucestershire; connected with the Severn at Nass Point, by a canal one mile in length; and having nine branches running from the main line to various coal and other mines in district traversed.—Length, about 26 miles.—Capital, £110,000.—Use, much the same as the one preceding.

1810.

THE MONMOUTH RAILWAY, from Howler Slade to town of Monmouth, and also connected with Forest of Dean. Several branches (number not mentioned) communicating with quarries and collieries in direction of main line.—Length, not given.—Capital, £22,000.

1811.

THE BERWICK AND KELSO RAILWAY, from Spittal, in the county of Durham, to Kelso, in Roxburghshire.—Capital, £130,000: but as no steps have yet been taken to execute this work, beyond merely procuring the Act of Incorporation, it is unnecessary to give further particulars.

THE HAY RAILWAY, from Wharf of Brecknock, and Abergavenny canal, near Brecon, to village of Parton Cross, in the parish of Eardisley, Herefordshire.—Length, 24 miles.—Capital, £50,000.—Use, transit of minerals and other products.

1812.

THE GROSMONT RAILWAY OR TRAMROAD, from termination of Llanfihangel railway, to Llanga Bridge, between Abergavenny and Hereford.—Length nearly 7 miles.—Capital, £13,000.

THE PENRHYNMAUR RAILWAY, from Penrhynmaur coal-works, to Red Wharf, in the parish of Llanbedrog, county of Anglesea; with branch a short distance northward, along the shore of Red Wharf Bay.—Length, upwards of 7 miles.—Capital, £10,000.

1814.

THE MAMHILAD RAILWAY, from bank of the Brecknock and Abergavenny canal, in parish of Mamhilad, to Usk Bridge, in county of Monmouth.—Length, above 5 miles.—Capital, £6,000

1815.

THE GLOUCESTER AND CHELTENHAM RAILWAY, from basin of the Gloucester and Berkeley canal, in the city of Gloucester, to the Knapp toll-gate, Cheltenham.—Length, about 9 miles.—Capital, £50,000.

1817.

THE MANSFIELD AND PINXTON RAILWAY, from Bull's Head Lane, in town of Mansfield, Nottinghamshire, to Pinxton Basin, near Alfreton, Derbyshire, on Cromford canal; with branch eastward from thence to near Codnor Park works. Length, 8½ miles.—Capital, £32,800.

1818.

THE KINGTON RAILWAY, a continuation of the Hay Railway, which it joins at Purton Cross, in Herefordshire, and proceeds to Kington, in the same county, and thence to the lime-works near Burlinjib, in Radnorshire.—Length, about 14 miles.—Capital, £23,000.

1819.

THE PLYMOUTH AND DARTMOOR RAILWAY, from the Sound, at Sutton Pool, a short way south of Plymouth, to Bachelor's Hall, parish of Lydford, near to the prisoners-of-war prison on Dartmoor; with branch to lime-works at Catsdown.—Length, about 30 miles.—Capital, £35,000.

1821.

THE STRATFORD AND MORETON RAILWAY, from Stratford-upon-Avon, in the county of Warwick, to Moreton-in-Marsh, in the county of Gloucester,

with branch to Shipton-upon-Stowe, in the county of Worcester. Length, 18½ miles.—Capital, £50,000.

THE STOCKTON AND DARLINGTON RAILWAY, from Stockton, on left bank of the river Tees, by Darlington, Sims Pasture, and West Auckland, to Witton Park Colliery, near Bishop's Auckland, with five branches.—Length of main line, about 25 miles; of branches, about 15 miles.—Capital, £100,000, with permission to raise on bond, £150,000 additional. This is the first railway in Great Britain upon which locomotive steam engines were used, a fact which it would be ungenerous to pass without notice, since it reflects so much credit on the enterprise and liberality of the company. It is gratifying also to be able to state, that, so far from suffering by their energetic boldness, the company have, in all their objects, proved eminently successful.

1824.

THE REDRUTH AND CHACEWATER RAILWAY, from the town of Redruth, in the county of Cornwall, to Point Quay, in the parish of Foeck, in the same county; with four branches.—Length of main line, 9½ miles; of branches 5 miles; in all, 14½ miles.—Capital, £22,500.—Object, conveyance of rich mineral products of the district.

THE MONKLAND AND KIRKINTILLOCH RAILWAY, from Palace Craig, in the parish of Old Monkland, in Lanarkshire, to Kirkintilloch, in Dumbartonshire; with branch at Howes, to a colliery three quarters of a mile from main line.—Length of main line, 10 miles.—Capital, £25,000.—Object, conveyance of coal and iron of the district for shipment on Forth and Clyde canal, &c.

1825.

THE RUMNEY RAILWAY, from Abertyswg, in the parish of Bedwelly, county of Monmouth, to the Sirhowy railway, at or near Pye-corner, in the parish of Bassaleg, same county, about two miles and a half west from the town of Newport.—Length, 21½ miles.—Capital, £47,100.—Object, conveyance of minerals.

THE WEST LoTHIAN RAILWAY, from Edinburgh and Glasgow Union Canal, near Ryehall, in the parish of Uphall, to Shotts, in Lanarkshire.—Length, including two branches, 23 miles.—Capital, £40,700.—Object, transport of coal, iron, &c.

THE CROMFORD AND HIGH PEAK RAILWAY, from Cromford Canal, one mile south of Cromford, to Peak Forest Canal, at Whaley Bridge.—Length, about 34 miles.—Capital, £164,000. This railway deserves a more lengthened notice than most of the foregoing, on account both of the important commercial points with which it is connected, and the many difficulties overcome in its formation. It has opened a communication between the counties of Derby, Nottingham, and Leicester, and the towns of Manchester and Liverpool; and it surmounts an elevation of 990 feet, by means of stationary engines on a series of inclined planes; passing in one place through a hill by a tunnel 638 yards in length; and having no fewer than 52 bridges and archways constructed along the line.

THE NANTLLE RAILWAY, from the slate quarry, near Nantlle Pool, county of Caernarvon, to the shipping quay, at Caernarvon.—Length, not stated.—Capital, £20,000.

THE PORTLAND RAILWAY, from the Priory Lands in Portland Island to the Stone Pier at Portland Castle. Length, above two miles.—Capital, £5,000.

THE DUFFRYN LLYNVI AND PORT CAWL RAILWAY, from Llangoneyd to a bay called Port Cawl, parish of Newton Nottage, both in Glamorganshire. Length, 16½ miles.—Capital, £60,000.—Use, conveyance of coal, iron, lime, freestone, &c. This line is one continued descent, from near its commencement to its termination on the Bristol Channel,—at first, of above 50 feet; then, of about 15 feet; and latterly, of 28 feet, per mile.

THE BOLTON AND Leigh RAILWAY, from the Manchester, Bolton, and Bury Canal, near the town of Bolton-le-Moors, Lancashire, to branch of Leeds and Liverpool Canal, communicating with Duke of Bridgewater's Canal at Leigh. including—Length,

extension to Manchester line, $7\frac{1}{2}$ miles.—Capital, £102,025.

1826.

THE BALLOCHNEY RAILWAY, from branch of Monkland and Kirkintilloch Railway, near Airdrie, in Lanarkshire, to Ballochney, in the same county; with branch, $1\frac{1}{4}$ mile long, to coal-pits near Clarkston.—Length of main line, 4 miles.—Capital, £18,425.—Use, conveyance of coal to Glasgow, and of coal, iron, and stone to neighboring furnaces.

THE DULAIK RAILWAY, from Aber-Dulais, to lime-works at Cwm-Dulais, parish of Cadoxton-juxta-Neath, Glamorganshire.—Length, $8\frac{1}{4}$ miles.—Capital, £10,000.—Use, transport of iron, iron-stone, lime, coal, &c.

THE DUNDEE AND NEWTYLE RAILWAY, from Dundee to Newtyle.—Length, 11 miles.—Capital, £50,000.—Use, transport of agricultural produce, goods and passengers.

THE EDINBURGH AND DALKEITH RAILWAY, from south side of city of Edinburgh to near Newbattle Abbey, in neighborhood of Dalkeith; with three branches, $6\frac{1}{4}$ miles long in aggregate, to collieries and other points of traffic along the route.—Length of main line, $10\frac{1}{4}$ miles.—Capital, £125,000.—Use, conveyance of produce of all kinds, and goods and passengers.

THE GARNKIRK AND GLASGOW RAILWAY, from Cargill Colliery, near Gartsherrie Bridge, Lanarkshire, to junction of Forth and Clyde and Monkland Canals, at Glasgow.—Length, $8\frac{1}{4}$ miles.—Capital, £40,000; but much more than this has been expended, and the work is far from being remunerative.—Use, conveyance of coal, iron, goods, passengers, &c.

THE HECK AND WENTBRIDGE RAILWAY, from Heckbridge, parish of Snaith, to Knottingley and Goole Canal, West Riding of Yorkshire.—Length, $7\frac{1}{2}$ miles.—Capital, £18,900.—Use, chiefly conveyance of stone, for shipment to London.

THE LIVERPOOL AND MANCHESTER RAILWAY, from Wapping, in Liverpool, to Water-street and Liverpool-road, Manchester.—Length 32 miles.—Capital, £510,000 at outset, with power to borrow £127,500 more; but the outlay has amounted to nearly one million and a half, which has been met by the issue of additional shares, and the raising of additional loans.

As we mean to make the progress and general history of this great railway a subject of more detailed remark at a future stage of our progress, we pass over it thus cursorily in the meantime, in order to complete our summary down to the present period with as little interruption as possible.

(To be Continued.)

ON THE MANUFACTURING ART.

We have to announce, that a few days since, Mr. Cooper commenced his second, or spring course of lectures on manufacturing art, at King's College, to a crowded auditory of the pupils and friends of this establishment. He began by expatiating on the advantages afforded to students in familiarising themselves with the practical processes of manufacture, as well as the liberality with which many manufacturers had received the class. He referred to the history of papyrus, and the manner in which its leaves were put up in scrolls; with the pages running longitudinally. The lecturer having described the old process of working by hand, proceeded to the improved machinery introduced by Fourdrinier, which has conferred such great benefit upon the community. By his process, the sheet of paper was made to any length, and when the Duchess of Sutherland visited his establishment, a sheet of paper was drawn out which extended to her carriage at a distance of a mile and a half. By another manufacturer, a sheet of tissue paper had been made four miles in length. Several experiments on the strength of different kinds of paper were related, in one of which it was stated that a sheet of letter-paper had lifted a man of one hundred and fifty-four pounds weight. A most sur-

prising improvement also was the cutting machine, by which 180,000 cuts were performed or done so quick that it almost amounts to grinding. A boy, whilst superintending this process, was reading a German book, which he let fall into the machine, and it was immediately cut to pieces; the letters, which were transferred on sheets of paper, having a very singular appearance. The lecturer explained that attempts were being made to manufacture paper from New Zealand flax; and he also exhibited a specimen made from the refuse of silk, which may be useful in imitating Chinese paper. The supply of rags to the paper manufacturers of this country was most from the Continent, and from their appearance a good idea may be formed of the social character and condition of the inhabitants. During the delivery of the lecture, a sheet of paper was made on a working model, and was handed round to the audience.

"M. G."—Such a ground of opposition to the patent would not succeed before the Attorney General.

"P. Janson."—Yes; if the patent extends to the colonies, but not otherwise.

"Subscriber from the Commencement."—B. will have the patent right at law, and if A's subsequent patent be substantially for the same invention, it may be annulled. We fear the title having the conjunctive "and" would, under the circumstances affect the validity of the patent. The defect, however, may be remedied by a disclaimer of part of the invention, and we should recommend that to be done immediately under the late Act.

"F. Abbott," Manchester.—Our first Volume may be obtained, by order, of the Booksellers in Manchester. The weekly numbers—"THE INVENTORS' ADVOCATE" being a newspaper, and therefore transmissible by post—should be ordered of a local News-seller, who will ensure its regular delivery at the London price. Our Correspondent will see his request has been attended to.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSO CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
Bogota	Denmark	Nevis
Bahamas	Dominica	New Brunswick
Barbadoes	France	Newfoundland
Berbice	Gibraltar	Nova Scotia
Bermuda	Greece	Quebec
Brasils	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Heligoland	St. Lucia
Caraccas	Honduras	St. Vincent's
Cartagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Columbia	Laguayra	Trinidad
Corfu	Malta	Zante
Cuxhaven		

It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their News-men, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 6, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"W."—The infringers may be restrained by injunction from the Court of Chancery, from using the invention. The expense will depend entirely on the particular circumstances. You will find the subject fully explained in Nos. 10 and 11 of our Journal. The registration would give you no protection, and we refer you to No. 19, for a full explanation of the "Act for Registry of Designs."

"D. G."—Our correspondent asks, if "JULLIEN'S POWDERS for fining Wines," noticed in our Paper of last week, "can be procured in London?" We are ourselves unable to answer the question, but at this query, in a printed form, will meet the eye of the Proprietor in Paris, to whom we will address a copy of our Journal, per post, we have no doubt we shall shortly be able to oblige our correspondent.

"J. T. M."—It can only be repealed by proceedings under scire facias.

"P. Harding."—No; it must be enrolled within the time limited by the patent, or it will become void.



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, FEBRUARY 1, 1840.

The importance of Railway Communication has at length roused the attention of the legislature, and it is proposed to pass a general law for the regulation of all railways to be hereafter made. In the House of Commons, on Wednesday, a resolution was agreed to, to the effect that a clause should be inserted in all future railway bills, for rendering them subject to the provisions of some general Act to be passed during this session. The bills for regulating the navigation by steam, and for the establishment of inland bonding warehouses, have been deferred till the 4th of

February; the time of the House having been too much occupied with questions of party politics, to enable Mr. LABOUCHERE to proceed with those important measures. Mr. Sergeant TALFOURD's renewed bill for amending the law of copyright has also been deferred to the same day. The corn law question will be brought before the House of Commons on the 6th of February, on which day Mr. PRYME has given notice that he will move resolutions to the effect, that the average price at which wheat may be imported at the lowest duty of 1s., should be diminished from 73s. to 70s. per quarter, and that the prices to which the higher duties attach, should also be diminished respectively 3s. a quarter, in the first instance, and that a further reduction be made in future years. This proposition of Mr. PRYME's, it will be seen, would maintain the present machinery of the corn laws, with a reduction of the average prices at which the existing duties should commence.

ON THE CURRENCY QUESTION.

In accordance with the principle we have adopted of publishing the communications of correspondents, if written with ability and moderation, even when we cannot concur in the opinions they express, we last week inserted a letter on the Currency, though the views taken by our correspondent of that important question are opposed to those we entertain. The object of our correspondent, though not explicitly so stated, is evidently to deprecate a paper currency, whether convertible into gold or not; and to endeavor to show that the profit derived from the issue of paper money is so much taken from the pockets of the people, and to their decided injury.

He puts the case of a nobleman, who possesses landed property of the value of £2,000,000, being empowered to issue notes to the amount of £1,000,000; for the payment of which, his estates, of double that value, are to remain as permanent security. A paper currency based on such a foundation, is admitted to afford the best security that any paper money can possess; and that being granted, our correspondent proceeds to observe, that the commodities such a banker would receive in exchange for the £1,000,000 in notes, and also for the deposits lodged in his hands, (less the amount of bullion kept in his coffers) would be obtained by him for nothing. So far we are disposed to concur

with our correspondent, assuming that the same amount of notes is always kept in circulation. But admitting the correctness of his illustration to that extent, we can by no means agree with him in the inference drawn from these premises, viz. that the possession of property, on the credit of the notes, is "an abstraction of commodities from the hands of industry." The principal difference between the case of the assumed banker, and of a tradesman who obtains goods on credit, would consist in the amount of their transactions, and the extent of their comparative credits. The difference in the banker's case would be decidedly to the advantage of the public, for it is admitted that he would give, at the time of receiving his commodities, a real representative of the value of the goods he purchases, convertible into cash on demand, whilst the tradesman gives only a bill at three or six months date, which cannot be converted into specie, or passed in exchange for other goods, without an abatement for discount; and is always liable to the risk occasioned by the vicissitudes of trade.

Assuming, as our correspondent does, the supposed banker to be solvent, and that he possesses real property double the amount of his notes in circulation, it appears to us that the operation which he condemns as an abstraction of commodities from the hands of industry, would be extremely beneficial to the community. It would create a demand for the products of labor, to be exchanged for a real representative of value that would enable the vendor to go into the market and obtain other goods, for which those notes would be received in payment as readily as gold.

We are not aware, exactly, of the extent to which our correspondent would carry his views; but, unless he be prepared to disallow all credit whatever in business transactions, we cannot conceive a more secure system of credit than the one he has assumed, and which he [seems disposed to consider little short of robbery. If he were to carry out the principles he has broached to their full extent, we must have recourse to barter; for what are the precious metals when used as coin, but representatives of value? Nay, in some respects, the notes of the banker would be of more steady value than gold, for the high value of the latter depends on its limited supply, and is always liable to be depreciated by the discovery of new veins of gold ore, or by improvements in working the mines already known; whereas the notes of our assumed banker being based on land, must, under any

circumstances, possess a real value, superior in stability to that of gold itself. It appears, indeed, from the latest estimates, that the produce of the gold mines in all parts of the world has lately very materially increased. The present annual supply of the precious metals, from all the gold and silver mines, is estimated at £6,000,000, (about one half of which is used in the arts and manufactures); and as the former great demand for the precious metals in the East has been changed into a supply from mines in that quarter of the globe, we may reasonably anticipate a considerable reduction in the value of gold and silver.

The illustration of the establishment of a paper currency, given by our correspondent, affords, in one point of view, matter for serious consideration. He has shown that an individual empowered to issue paper money possesses the advantage of enjoying, on the faith reposed in the value of the notes issued, the use of all the commodities to be purchased by the amount of notes in circulation for nothing. Now, is this an advantage that ought to be lost to the nation? Does it not suggest the propriety of having a paper currency based on the credit of the country, to be regulated by a consideration of national interest, and not by the fluctuating, sordid, and capricious management of any mercantile establishment? A paper circulation so based and regulated, would, we conceive, be the means of preventing most of the evils of the present system. It would secure to the nation the profit to be derived from the issue of paper money; it would place circulation on a basis to be shaken only by such a convulsion as would cause a national bankruptcy; and it would be the most effectual means of guarding against commercial panic, and consequent general distress.

THE AUSTRALIAN BOMERANG.

The Australian savages have taught the scientific, ingenious, and civilised nations of Europe, to achieve what was considered an impossibility. They have shown, by the use of their commonest warlike missile, that it is possible to construct an instrument which, on being propelled horizontally, will, after its projectile force has been expended, return to the person who threw it. Now if, previously to the establishment of this fact, it had been proposed to make an implement that, without striking against any solid body from which it could rebound, would return to the spot

whence it was thrown, after having been hurled to a distance of 100 yards horizontally, the proposition would have been considered an impossibility, and the attempt to make such an instrument would have been treated with ridicule. Yet this apparently absurd and impossible proposition has been accomplished, and is witnessed in the Australian Bomerang.

We must confess, that when we first heard of such a weapon, we were disposed to think the statement a traveller's tale; but this extraordinary missile has been introduced into England and is now sold as a philosophical toy. We have had opportunities of witnessing its powers, and as no explanation has, we believe, been hitherto given of the cause on which its peculiar action depends, we shall first briefly describe the instrument, for the benefit of those who may not have seen it, and then state what we conceive to be the causes of its peculiar effects.

The Australian Bomerang consists of a piece of ash, or other strong wood, about three feet long, and two inches wide, and a quarter of an inch thick, which is bent nearly at right angles, one limb being rather longer than the other. One of the sides is flat, and the other one is rounded. The instrument, when used, is held by the end of the longest limb, with the flat side downwards, though inclined at an angle of about 45 degrees. It is hurled in a horizontal direction, a rapid rotatory motion being communicated to it at the time; which, owing to the form of the weapon, may be readily done. As soon as it is projected, the Bomerang rises obliquely in the air, to a height of 60 feet and upwards, and when its projectile force is expended, it begins to descend in the same course that it rose; its rapid rotatory motion being still continued. Several times during our experiments with the instrument, we were obliged to run away from the returning weapon, which struck the ground with great force near the spot whence it was thrown.

In order to understand the explanation of this phenomenon, it must be borne in mind, that any body, whose surface is inclined when moving horizontally, receives an upward impulse, owing to the resistance of the air, which re-acts on the slanting surface. The rising of a kite is a familiar exemplification of this fact; for the same effect is produced, whether the kite be carried against the air, or the moving air strike against the kite. Now the rotatory motion communicated to the Bomerang, when it is thrown, keeps its flat surface at the same

angle to the horizon which it presented when first projected, and it has the same action against the air that a flat ring of wood of the same dimensions would have, if, when placed at an angle of 45 degrees, it were moved rapidly in a horizontal direction. The effect would be, that it would rise in the same manner as a kite is raised when a boy runs with it.

The Bomerang is elevated sixty feet or more by the time its projectile force is expended; but as the rotatory motion continues, the inclination to the horizon is preserved, and the same cause which carried it in an oblique course upwards, when the original force impressed on it was in a horizontal direction, obliges it to return in a similar manner when the force of gravitation draws it downwards.

A very simple experiment will illustrate the retrograde motion of the Bomerang in its descent. When a card held in a slanting position is permitted to fall, it does not drop perpendicularly, but takes an oblique direction, which it preserves so long as the card retains its inclination to the horizon. The rotatory motion of the Bomerang serves to maintain it in the proper position, and it therefore glides down upon the air as if moving down an inclined plane.

The explanation we have given is, we conceive, sufficient to account for the extraordinary phenomena of the Bomerang, upon principles exceedingly simple, and which remove all difficulty in comprehending its action.

The Australian Bomerang affords a useful lesson to be cautious in limiting the number of possible inventions, for it proves that an effect which would formerly have been considered an impossibility, may be produced by the mere re-action of the air in a manner exemplified in every day's experience.

NEW INVENTIONS.

ASPHALTIC PASTEBOARD.

Mr. Leys, general agent of the Lobsann Asphaltum Company, has applied for a patent of invention and improvement for his Asphaltic Pasteboard. This pasteboard, which is first rendered impervious to water by an ingenious process, and afterwards covered with a layer of asphaltum, is calculated for the covering of roofs, or the lining of damp walls; and as in adopting it, the saving will be very considerable, the inventor may anticipate the greatest success, should his invention be found to answer.

NEW METHOD OF TUNING PIANOFORTES.

M. Sax, jun., whose clavinet, and other inventions, have classed him among the first musical instrument-makers in Europe, has just discovered

an easy method of tuning the piano in unison with any other instrument. This has long been a desideratum, and the piano has been dispensed with in the orchestra because it could not readily be put in tune with other instruments, which are sometimes affected by the variations of the atmosphere, even during the performance. This inconvenience is removed by the invention of M. Sax, and in future the piano will be the easiest instrument of all to put in tune; by his method, it can be tuned higher or lower immediately, in order to be in unison with other instruments, and two, four, or even twenty pianos can be put in tune together without difficulty, so as to form a most agreeable concert.

ECONOMY OF FUEL IN IRON FOUNDRIES.

A letter from Stockholm, dated 12th December, 1839, says, that a royal ordinance has just been published, granting to a French engineer, named Droonet, permission to make trial of a new invention, by which a saving of 30 per cent. is to be effected upon the fuel employed in the forges and iron foundries of Sweden; and by which the metal produced is to be both increased in quantity and improved in quality. The committee of iron masters have voted a sum of money in order to try this invention, which, if found to answer, will be adopted on terms very advantageous to the inventor. It is not known whether M. Droonet has introduced it into France; but in Austria it has been approved by the owners of mines; and the masters of many of the forges in Styria and Corinthia have employed the new process with great success. This invention promises important advantages to the mining interests of Sweden.

NEW DRAINING APPARATUS.

M. Galli Cazala has gone to Holland to submit to the King's inspection his apparatus for draining, which he proposes to employ in draining the lake of Haarlem. He has improved much upon the original invention, which its friends are sanguine enough to anticipate will supersede even steam power.

NEW METHOD OF SCULPTURING MARBLE.

The Academy of Brussels are adopting a method of sculpturing marble, introduced by M. Simonis, which saves much labor. The cost of the new instrument will scarcely exceed that of the three compasses and of the other tools usually employed, but the saving will be in the time, for the necessity of forming numerous calculations and estimates is superseded.

VAUGHAN'S WATERPROOF.

A number of specimens have been sent us, with a view to our examining the validity of the waterproofing process as practised by Messrs. Vaughan. From repeated experiments, we are bound to pronounce favorably; every article tested, having proved impervious to water.

LITERATURE.

REVIEW OF BOOKS.

The Edinburgh Review.

In the current number of this valuable periodical, there is an article on "Watt and the steam-engine," from which we extract the following interesting particulars:—

Were we to inscribe on two separate tablets the distinguished names which adorn the history of our intellectual and social progress, it might be a matter of national controversy who should take the precedence on the one; but there would be no hesitation in determining who should be placed at the head of the other. England and France, and Italy, and Germany, might contend about their Newtons, their Laplaces, their Descartes, their Galileos, and their Keplers; but Europe and

America would simultaneously pronounce the name of Watt as the most illustrious of the benefactors, whose inventive genius has administered to the luxuries and wants of mankind.

Nor was this enviable pre-eminence the result of any brilliant conception, or of any felicitous creation of the mind, to which the name of invention or discovery could be distinctively applied. Mr. Watt was the improver, not the inventor, of the steam-engine. He found the crazy machines of Savery and Newcomen laboring and creaking at our mine-heads, and occupying the same rank as prime movers with the wind-mill and the water-wheel; and by a succession of inventions and discoveries, deduced from the most profound chemical knowledge, and applied by the most exquisite mechanical skill, he brought the steam-engine to such a degree of perfection as to stamp it the most precious gift which man ever bequeathed to his race.

M. Arago claims, for Dennis Papin, a Frenchman, a portion of the honor due for such an invention. The reviewer says that—

Notwithstanding this admission, and with every anxiety to throw off the incubus of national possessions, we cannot award to the French physician the high merit which M. Arago has so skilfully claimed for him. When we first hear of the upright cylinder—its nicely fitted piston—the introduction of the steam beneath it—the subsequent rise of the piston—the condensation of the steam, and the consequent descent of the piston in the cylinder—we are misled by a succession of words and ideas before we have formed a just estimate of their historical meaning. But when we recollect that Otto Guericke had, previous to 1672, used an upright cylinder with a packed piston and piston rod; and that he actually raised heavy weights with this apparatus, by means of the pressure of the atmosphere rendered effective by the extraction of the air beneath the piston, we cannot avoid the conclusion that the apparatus of Papin is the apparatus of Otto Guericke; in which he substituted the elastic force of steam, and its subsequent condensation, in place of the exhaustion of the air beneath the piston. But as the elastic force of steam was not a new invention, Papin can claim no other merit than that which belongs to the idea of forming a vacuum, by condensing the steam after it had elevated the piston;—an idea, too, which he carried into effect with so little ingenuity, that we are led to view the whole proposal as a speculation on which its author placed but little value.

The first, and most interesting, chapter in Mr. Watt's invention, has not been noticed by M. Arago, nor any of his commentators; and the reviewer thus supplies the omission:—

Among the apparatus belonging to the Natural Philosophy Class at Glasgow, was a small model of Newcomen's steam-engine, which would not work satisfactorily. Dr. Anderson, the Professor, sent it to Mr. Watt to be repaired, and from his skilful treatment it was made to perform its annual reciprocations in the class-room. At this epoch, Mr. Watt derived his knowledge principally from Desaguliers, and partly from Belidor; and he informs us that "he set about repairing the model as a mere mechanician." When it was repaired, however, and set to work, he was surprised to find that its boiler, though apparently large enough, could not supply it with steam. It soon occurred to Mr. Watt that this was partly caused by the little cylinder exposing a greater surface, in proportion to its contents for condensing the steam, than the cylinders of larger engines; and partly by the cylinder being made of brass, which was a better conductor of heat than the cast-iron cylinders of larger engines, which were generally lined with a stoney crust. The first of these evils he corrected by shortening the column of water in the pump, which enabled the boiler to supply the cylinder with steam, and make

the model work regularly; and, with the view of finding the means of correcting the second, he constructed a small engine, with a cylinder six inches in diameter, and twelve inches stroke, made of wood soaked in linseed oil, and baked to dryness. Mr. Watt made many experiments with this engine; but he found that the wooden cylinder was not likely to prove durable, and that the steam condensed in filling it still exceeded the proportion of that required for larger engines. He now attempted to produce a more perfect vacuum by throwing in more injection water; but finding that this caused a disproportionate waste of steam, he ascribed this result to the fact recently discovered by Dr. Cullen, that water and other liquids boiled in *vacuo* at temperatures below 100 Fahr.; from which he inferred that, at greater heats, the water in the cylinder would produce a steam which would resist the pressure of the atmosphere.

In order to ascertain the amount of this resistance, Mr. Watt began a series of experiments for determining the temperatures at which water boils under different pressures, greater than that of the atmosphere; or, in other words, the elasticity of steam at various temperatures. The general result afforded by this inquiry was, that when the temperatures increased in an arithmetical ratio, the elasticities followed some geometrical ratio; and, projecting his results, he obtained a curve which gave him the particular ratio, "near enough for his purpose."

Mr. Watt, at last, took out letters-patent for the method of lessening consumption of steam, and, consequently, of fuel, in fire-engines:—

We have not been able to learn what was the expense of Mr. Watt's patent, nor how he was enabled to raise so large a sum as he must have required. It appears, however, that, in 1767, two years nearly before his specification was enrolled, he was occupied in surveying the Forth and Clyde Canal, and in other public works; though Dr. Cleland informs us that in 1768 he gave up his shop in Glasgow, and, next year, that is 1769, commenced business as a civil engineer. It is not improbable that he devoted himself to these more lucrative occupations with the view of defraying the heavy expenses of his patent, and of enabling him to bring his great inventions successfully before the public. Notwithstanding this confusion of dates, which M. Arago's Memoir does not help us to clear up, there seems to be little doubt that Mr. Watt was actually employed as a civil engineer of the Carron Ironworks, by Dr. Roebuck, who at that time rented the extensive coal and salt-works at Kinnel, belonging to the Duke of Hamilton. Dr. Roebuck thus became acquainted with Mr. Watt's improvements, and proposed to enter into a copartnership with him, and to obtain a patent for a steam-engine, on the principle of the model fitted up at the Delft House. With the view of realising this project, Mr. Watt constructed an engine on a larger scale, with an eighteen inch cylinder, and fitted up in the offices of Kinnel-House. At its very first trial, this engine exceeded his most sanguine expectations, and we have no doubt that Dr. Roebuck then entered into partnership with Mr. Watt, and, on condition of receiving two-thirds (a most exorbitant share) of his patent, paid at least his share of its expenses. The unexpected difficulties which occurred in working and raising the Duke of Hamilton's coal, compelled Dr. Roebuck to give up his refining works at Birmingham, his vitriol work at Prestonpans, and his ironworks at Carron; and the share which he held in Mr. Watt's patent thus became the property of his creditors. In giving an account of these transactions, which M. Arago does very briefly, he has been led, by imperfect information, to represent Mr. Watt as giving up his invention, and changing his profession, in consequence of Dr. Roebuck's failure.

M. Arago then goes on to detail the occupation

of Mr. Watt as a civil engineer from 1767 to 1773 describing him as "bearing without a murmur the ignorant neglect of capitalists, and for eight years bending his lofty genius to a succession of plans and minute levellings," until his indifference is overcome, early in 1774, by the aid of his friends, who brought him into connexion with Mr. Boulton of Soho.

Now, it was in consequence of Mr. Watt's change of profession in 1767, that he was employed by Dr. Roebuck; and the delay which took place in bringing his patent into practical use, was not from want of money, and still less from indifference, but solely from two-thirds of his patent right belonging to Dr. Roebuck's creditors. The delay in settling such complicated transactions as those of a sequestered estate, necessarily put a stop to Mr. Watt's progress, however ardent he might have been; and it was by the transference of Dr. Roebuck's share of the patent to Mr. Boulton in 1773, brought about no doubt by Dr. Small and others, that this celebrated partnership was constituted.

It is impossible, however, to read these details without sharing in the feeling of sorrow so eloquently expressed by M. Arago, "that the inventor of an engine destined to be the beginning of a new era in the annals of the world, should for eight years have bent his lofty genius to a succession of plans and minute levellings, and the most wearisome estimates of excavations and embankments, and courses of masonry." And may we not add our astonishment, that civilised states should still persist in shackling, by bad laws, the freedom of inventive genius, and in withholding from the best benefactors of their country, those inalienable rights which are conceded to every other member of the community? Had Mr. Watt been able to communicate his inventions to the public, and yet retain the same right to them that an author does to the productions of his pen; or could he have confided in the generosity of the state, and surrendered his inventions to public use, our country might have stood even higher than she does in the scale of nations.

But there is another lesson which we are called upon to read to the supporters of our patent laws, and the despilers of our patentees, even when they have purchased by massive gold an impression in wax of the Great Seal of England. Had the pirates of Mr. Watt's day—the Cornish miners, and their obsequious engineers, had the sagacity to see the infinite value of Mr. Watt's inventions, when they were embalmed in parchment in the Rolls' Chapel, or when they lay in abeyance among the bankrupt affairs of Dr. Roebuck—when the proprietor of two-thirds of the golden mine had not a farthing to defend it, and the holder of the other third no funds at his command, and probably no heart for an encounter with the quibbles of the law, we should have seen the beautiful inventions we have described—the *dicta membra ingenii*—lying mangled and disfigured at the mine-beds of Cornwall, as miserable appendages of Newcomen's engines. Improved perhaps in their minor details, as Mr. Watt might have improved them, no court of law could have recognised their identity with the original. The subsequent inventions of Mr. Watt would never have been heard of, and his great mind would have sunk amid the 'levellings and excavations of the Carron and Caledonian Canals.'

It was fortunate, however, for Mr. Watt and the world, that things were otherwise arranged. Two-thirds of the property of the new steam-engine was one of the items in the *cessio bonorum* of Dr. Roebuck! and it fell, as we have already stated, into the hands of Mr. Boulton. In this manner commenced that renowned copartnery, which will form so memorable an epoch in the history of civilisation. But great toils were yet to be endured before its advantages were to be secured to the inventor; and great difficulties to be overcome before the public were to enjoy its benefits. The imagination of the poet far outstripped the march

of the inventor, in Darwin's celebrated prediction—

"Soon shall thine arm, unconquer'd steam, afar
Drive the slow barge, and drive the rapid car."

At this eventful period of Mr. Watt's life, and before the commencement of his copartnery, domestic affliction had laid its leaden hand upon his affectionate heart. On the 24th September, 1773, while he was surveying the Caledonian Canal, Mrs. Watt, (his cousin Miss Miller,) whom he had married in 1764, and by whom he had two sons and two daughters, died in child-bed of a still-born son. At this very time, however, Mr. Boulton had purchased Dr. Roebuck's share of the patent; and the impulse thus given to Mr. Watt's mind, and the new demands made-upon his intellectual efforts, were, doubtless, kind auxiliaries in assuaging the deep grief which had overwhelmed him.

In 1774, when the copartnery commenced, the patent had only nine years to run, and they were not prepared either to issue a license or to sell an engine. Mr. Watt had transported to Soho the experimental engine erected at Keneil; and he successfully altered and improved it till he had brought it to a high degree of perfection. The great difficulty which he experienced was to make the piston steam-tight; and he soon saw that his cylinder must be bored perfectly cylindrical, and highly polished. The invention of Mr. Watt, indeed, went beyond the state of the mechanical arts in England; and it was not till 1775 that John Wilkinson, the celebrated iron-master, introduced the new method of boring large iron cylinders. In 1776, however, this enterprising individual had supplied Messrs. Watt and Boulton with several cylinders almost without error; and in one of these, fifty inches in diameter, erected at Tipton, in Staffordshire, the error did not exceed the thickness of an old shilling in any part of it.

Having now overcome the principal difficulty which beset them, Messrs. Watt and Boulton petitioned Parliament for an extension of their patent; and after a violent opposition, sustained by the most powerful talents in the House of Commons, an Act was passed in 1775, vesting in Mr. Watt the property of his engines for twenty-five years.

The extension of this patent was opposed by Burke.

Mr. Muirhead has attempted to find an apology for Burke's conduct, in the fact that he had no hostility to Mr. Watt or his patent, but opposed it simply from a sense of duty to the real or supposed claims of a constituent! But such a motive is, in our opinion, the greatest aggravation of his error. Had he opposed the patent, as some weak men oppose all patents—as a monopoly injurious to the interests of the community—we might have respected the motive, however much we must have bewailed the ignorance which it disclosed; but he did it to gratify the illegal cupidity of one man, and that man, too, a fraction of the constituency that made him a legislator. Let our statesmen beware of following such an example. Even at the present period, questions are in agitation, in which the intellectual rights of mankind are deeply staked; and it is time that public men should know that they are the guardians of interests higher than those of their immediate political supporters; and that, should they yield to the pressure of vulgar clamor, or the impulse of selfish ambition, posterity will impunnel a stern jury for their trial, and fix upon their names a stigma which no temporary political measures ever can efface. With what different feelings will they cherish the names of Brougham and Taltauld, the champions of the mechanical and the literary genius of their country!

Zincography has been introduced into Belgium, having been hitherto known only in England. The experiments of M. Degobert and his coadjutors have proved perfectly successful.

FINE ARTS.

M. de Keyser's picture of the battle of Woerheim, and the statue of Innocence by Simonis, have been sent to Paris, to appear at the approaching exhibition.

M. Suchodolski, a native of Poland, and distinguished for battle pieces, a short time since repaired to Saint Petersburg to present, in person, some pictures which he had been commissioned to paint. The emperor, being much pleased with them, expressed a wish for the artist to paint the battle of Ostrolenta; but the latter suggested to the emperor that he was a Pole himself, that he had borne a part in that engagement, and had lost two brothers in it, and therefore requested to be excused from that task. The emperor sympathised readily in his feelings, and commissioned him to select three battle subjects from the wars against the Persians and the Turks.

M. Vien, the painter of Marshal Jourdan's portrait which is to be seen in the hall of the Marshals at Versailles, and of a number of other historical portraits, has been made a knight of the Legion of Honor. M. Vien is the son of the celebrated Vien, who was the regenerator of the art of painting in France, and the master of David.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL GEOGRAPHICAL SOCIETY.

At the ordinary meeting on Monday evening, G. B. Greenough, Esq. F.R.S., in the chair, after a number of presents had been announced, including a collection of ancient geographical writings from Sir Henry Ellis, the election of several new members was proceeded with, among whom were Sir James Clark, Bart., Major Chartres, and Captain Pemberton. A lengthy communication was read from R. H. Schomburgk, Esq., describing his third and last journey from St. Joachim, on the Branco, to Esmeralda, on the Orinoco, in 1838-9. This distinguished traveller, with his expedition, proceeded in a north-westerly direction, passing the mountains of Barime, and a series of perpendicular walls rising to the height of 1,500 feet. On reaching the falls he found them impassable, and was compelled to have the canoes drawn overland to a considerable distance, in order to avoid them. He experienced great privations, and for some time subsisted merely on water and cassada, a peculiar bread of the natives. All these discomforts, however, were amply compensated for by his arrival at Esmeralda, a spot which had not been visited by any traveller since Humboldt. He was situated very near the water's edge; but all that remained of it was a few dilapidated huts. The palm trees and savannahs, which that traveller had so graphically described, were still characteristically seen. Altogether, it was interesting from the associations of Christianity with which it was invested. Mr. Schomburgk, who was present, pointed out the several localities referred to in his paper; and three Indians, of the Warrow and Atoria tribes, whom he had brought over, were exhibited to the meeting in their native costume.

ROYAL INSTITUTION.

The weekly evening meetings in Albemarle-street, commenced on Friday the 24th ult., and, notwithstanding the tempestuous weather, hundreds assembled to hear Faraday "On voltaic precipitations."

The immediate subject matter explained and illustrated was, first, the modern application of voltaic precipitations to the copying medals, &c.; and secondly, to the production of beautiful colors, similar in arrangement to Newton's rings. When plates of platinum, forming the poles of a voltaic battery in action, are placed in a solution of sulphate of copper, metallic copper is immediately

deposited upon one of them, not in consequence of any power existing in the platinum, but because only of their connection with the battery. Platinum alone will not act on or decompose the solution. The voltaic principle is necessary to its activity, and is a modification of ordinary chemical effect. Mr. Faraday, season after season, is more and more convinced that electrical and chemical effects are identical. Iron, for instance, of itself, immersed in the solution of the sulphate, throws down the copper, and comes out perfect copper as to exterior. The deposition in this case is the effect of a substance able to act directly on the solution. Not so the platinum. This power of depositing, inherent in the iron, may be transferred. Iron and platinum in contact, placed in the solution, decompose it, and the platinum, of itself inert, now receives the copper deposit. The being able to transfer the deposit involves the process to be explained. Professor Jacob first, by publication in this country in September, 1839, proposed copying designs by voltaic precipitations. He had used an engraved card-plate to receive the deposit, which he allowed to accumulate to the sixteenths of an inch in thickness, and which, when separated, was an exact copy in relief of the engraved plate. Copies, or rather correspondencies, are thus obtained, more exact than would be possible by the press, or by any process of multiplication. The metal be it remembered, is perfectly in solution, and will not go down unless in contact with every part to which it adheres. The new metal is as hard as any produced by fusion, perfectly homogeneous, and of the same specific gravity as fused copper.

Mr. Spencer, of Liverpool, had worked out the thought practically, and known the process long before Jacob's letter had been published in this country; and in October, 1839, he gave to the world a much more practically useful account than that contained in it. His mode of operation to produce copies of medals was the following:—He took the lead, or rather fusible metal, to obtain a mould of the original medal, which should be connected by wire with a plate of zinc, and immersed in a solution of the sulphate of copper, the zinc being placed in dilute sulphuric acid, contained in a glass vessel with a plaster of Paris bottom, suspended in the copper solution. The clay diaphragm prevented the mechanical mixture of the two liquids, but was not a bar to electrical or chemical action, and the copper was deposited on the mould in the sulphate of copper, at the expense of the zinc in the sulphuric acid. The production separated from the mould is a perfect copy of the original medal. There is one step of the process which involves deterioration. The copper deposit cannot be renewed in the centre of the medal, but the process itself contains elements of perfection to a high degree. As an instance of this, Mr. Faraday stated that Mr. E. Solly, jun., had obtained an exact copy of a receipt stamp. He also described the ingenious method Mr. Solly had adopted, remarking, that he published it because such a circumstance was sure to become known to the rogue before the honest man; and, therefore, the sooner the latter were made acquainted with it the better. He spoke, however, to the visitors of the Royal Institution, and not to the miscellaneous thousands to whom the columns of a widely-circulating daily journal speaks. There are hundreds in the world who would apply the knowledge practically and dishonestly, to the injury of the already too much reduced and greatly neglected and abused revenue of England. We will not, therefore, by publishing the process, give increase to the facilities of fraud.

The other result of voltaic precipitations, namely, the production of colors, had been made known by Nobili, but with only a certain degree of information and a great deal of reservation. The effects had been named by him metalochromes; they are exceedingly beautiful, and afford the successive shades of prismatic colors. The subject has been investigated in England recently, and carried out to a considerable extent by, we think, Mr. Waddington and Mr. Gassiot; to the latter gentleman,

Mr. Faraday was indebted for the gorgeous specimens exhibited, and for the apparatus for illustration.

Our limits will not permit a detailed description; suffice it to say, that, similarly to the deposit of copper on the platinum electrode before related, depositions will take place on both electrodes immersed in a solution of sugar or acetate of lead. To facilitate this, the positive should be a polished steel plate, the negative platinum; or, indeed, almost any metal. On the former, almost immediately both are brought nearly into contact, colors the most glowing will spring into existence. They are dependent upon the deposition of peroxide of lead on the steel plate, and for their diversity to the thickness of the films, similarly to the colors of the soap bubble. The lead thrown down on the other electrode is the consequence of electrical action, but is not taken into account in this experiment. By changing the form of the negative electrode, every variety of figure may be obtained.

The subject announced for yesterday evening was, "The structure and growth of corals," by Dr. Grant.

SCIENTIFIC MEMORANDA, AND NOTES ON ART.

Metallic Architecture.—The works at the Favart theatre in Paris are proceeding with much activity, under the eye of the minister of public works. It is intended to make it completely fire-proof, iron being employed in the rafters and in the roof itself; and the party-walls, the staircases, the flooring, and in short wherever carpentry work is in general use, being likewise iron. The galvanising process has been uniformly resorted to.

Photography in India.—Photogenic drawing has been introduced into India, where it has attracted much attention, and where, certainly, so far as the action of the sun is concerned, there must be every facility for its execution. An improvement on M. Daguerre's practice has been invented at Calcutta by a Dr. O'Shaughnessy, who, instead of nitrate of silver, makes use of a still more costly material,—a solution of gold, by the aid of which he professes to be able to produce drawings very brilliantly colored, especially in shades of red, in purple, and even in green, which has hitherto been unattainable in Europe. The Doctor also avails himself of a lens, which is said to impart all the effects of light and shade to the pictures produced. If one half of the Doctor's presumed success be real, his improvements well deserve, and will no doubt soon receive, the honors of importation.

Royal Lancashire Observatory.—This newly-projected establishment, for astronomical and meteorological purposes, has for its president the Right Hon. Lord Francis Egerton. It is to be established in Higher Broughton, near Manchester, the identical spot where an humble and obscure individual, named Crabtree, made the observations which enabled Newron to arrive at some of his most valuable discoveries.

We cannot help expressing ourselves most warmly in praise of the institution, and hope to hear of its complete success. We have seen the prospectus issued to the public. If the advantages it holds out are realised, the undertaking can hardly fail to be productive of real benefit to science.

VARIETIES.

Silk Trade.—The weaving branch of the silk manufacture is beginning to feel an impulse from the season, and from the nuptial preparations at Court, which latter, especially, have already influenced the selection of robes for ladies of the higher circles. Whatever the most refined taste

could require will be shortly in the market; the manufacturers spare no cost, nor the workmen any pains, for the production of the most beautiful fabrics; and when the nuptials of the Queen take place, her ladies, arrayed in productions of the English loom, need not fear comparison with the fairest and most chastely splendid dames that the world can produce. Looms which have too long been out of use are quickly getting into work, and the operatives are glad to exercise their thoughts on matters more agreeable and profitable than the eternal "jaw joggle" of political mountebanks.—*Manchester Chronicle.*

Geology in Devon.—Dr. Buckland and Mr. Conybeare have both hastened to visit the land-slip on the coast of Devon, which, we understand, offers some very curious phenomena to the geologist, both inland and out at sea, where, at considerable distance from the shore, a new solid ridge has been thrown up by this convulsion of nature.—*Naval and Military Gazette.*

The late Hurricane in Belgium.—*Brussels, Jan. 25.*—The memorable hurricane of the 20th of November, 1836, was, doubtless, one of the most violent that we remember to have witnessed in Belgium, but then it lasted only one day; that which now prevails has desolated the country for this week past. It was, especially yesterday (the 24th), that the wind coming from the south-west blew with the greatest fury. About eight o'clock, a fearful tempest came and raged during the greater part of the night in the city and the environs. Loud claps of thunder were mingled with the roaring of the wind, the impetuosity of which was terrific. A great many houses in the city and suburbs have suffered severely from this hurricane. Fifty trees in the boulevards are torn up by the roots, and many others much impaired. We look with anxiety for news from our seaports, for it is feared that fatal accidents have occurred on the coast. Almost all the accounts from the provinces announce more or less considerable injuries done by the storm. The Seine has fallen considerably, and still continues to subside. The damage done by the inundations is not yet ascertained.

Domestic Economy.—The Medical Society of Metz have been lately consulted upon the question how far the feeding of swine on the offal of a butcher's shop affects the quality of the pork. A committee, appointed by the society, after having obtained every possible information from competent persons, who had made experiments on the subject, at different times, and in different parts of France, have come to the conclusion that in fattening hogs, a food, half animal and half vegetable, can have no injurious effect upon the future quality of the meat.—*Moniteur Industriel.*

Artesian Wells.—The boring instrument which is now at work on the Artesian well, in the *abattoir* of Grenelle, has reached to the depth of 508 metres (about 1665 feet). The strata through which it penetrates is still a sort of greenish clay. This instrument is formed of a bar of iron, of from 12 to 15 centimetres (4 or 5 inches) square; weighs 17,000 kilogrammes (37,188 lbs.); and requires 4 horses and 12 men to work it. The water is expected to burst upwards every moment; but nothing is more uncertain. With regard to the temperature of the water, it is always in proportion to the depth from which it is drawn, and increases one degree for every 30 metres.

The archives at Brussels, which belonged to the Secretaryship of State of Germany, and of the North, consist, in the first place, of a collection of documents relative to the reformation in Germany, and to the wars to which it gave rise; those are contained in 32 volumes, and comprise from 4,500, to 5,000 articles. Secondly, there are 1,300 manuscripts, containing at least 75,000 articles; and, thirdly, there are 52 registers.

The art of painting on glass, and of imparting to it the splendid colors which are seen in old monastic edifices, is said to have been re-discovered by M. Pluys, a glass-worker at Malines.

TALMA,— HIS DRAMATIC CAREER.

(Continued from our last.)

Nor was this "unknown" the only counsellor of Talma. The morning after a representation of *La Mort de Pompée*, the Emperor said to him, "I am not quite satisfied with this; your arms are too constantly in action; emperors are not so prodigal of motion: they know that a wave of the hand is an order; that a glance is death: and so they are chary both of gesture and of look. For myself, for instance, how often has a finger raised been a sufficient command for the discharge of 300 pieces of artillery; or to give a whole kingdom to the conquering swords of 300,000 men. There is a line too, of which you lose the spirit; you give it with too much candor—

Pour moi qui tient le trône égal à l'infamie.

César does not speak as he thinks; so many battles fought and won, have not conferred on him the sovereign power so that he should despise royalty, which, rightly looked at, is power at its extreme boundary; but he is under the necessity of flattering the old prejudices of Rome, and of not offending the soldiers who are listening to him. You ought not to make César speak as Brutus. When the latter declares he holds kings in detestation, we are bound to believe him; but not the other. Note this distinction."

This intimacy, every day on the one side so condescending, and on the other more and more respectful, added to the *éclat* of the actor. In the winter, his saloons were open as the general rendezvous of science, literature, and art; as well as of the *distingués* of the court, who followed wherever the favor of the imperial master rested. Talma kept at Paris what the French call *un grand état de maison*—an expensive establishment. He has been accused of extravagance, the consequence of a complete carelessness in his affairs; the crying sin of artists in general. His charming villa de Brumoy, which he was constantly improving, and on which Ducis has written some pretty verses, was the source of his heaviest expenses. Some one observed to him "Your trees ought to bear a golden foliage." But in charity, Talma's purse was constantly employed; never did a poor artist make an appeal in vain. He received one day, at Brussels, where he was playing, a letter from an old comedian, who had long since left the stage, requesting the favor of a *billet* to see Talma play—he being too poor to pay for one. Talma enclosed a ticket, and invited the writer to breakfast with him on the morrow:—the day came, and the expected guest. "Well," said Talma; "what did you think of my acting last night?" "Splendid, indeed!" exclaimed the old comedian; "I can readily believe you," rejoined Talma, "one always acts well when one does a good action. I played for your benefit; the receipts shall be handed over to you: do not refuse me, I owe you this little service:—*Vous êtes mon ancien.*"

He loved to play his first-rate parts at the Tuilleries. The enlightened court of Napoleon understood every point, and, besides, Napoléon himself was there. He said one evening after the performance, to those who complimented him, "Your praise is indeed flattering to my pride; and that pride may be permitted me. Never did actor play before such an assembly! I was the interpreter of Corneille, and the Emperor was before me."

The Court, however, where he was treated *en enfant gâté*, held out no attractive snare for his ambition, which was directed only to the perfection of his art; even in the most trivial conversation he never approached politics. Other nets were spread. The most lovely women of the empire were "gathered together" at the palace of the Tuilleries. Women are ever attracted by the blaze of renown, and fill with equal pride and pleasure the *salons* of Louis XIV. or Napoleon. Amongst them were queens and sovereign princesses. An Elcinora

will always be found to meet a kindred spirit to that which inspired Tasso; but Talma was on his guard, and remembered Ovid. His prudence disarmed suspicion, and protected him from those angry clouds of intrigue in which the thunder lies concealed.

Friendship, however, presented to Talma attractions unaccompanied by danger. To the honor of his character be it spoken, men of the most opposite political opinions were numbered among his friends. He lived on terms of the strongest intimacy with M. Bellart up to the time of his appointment to the magistracy, when M. Bellart became engrossed in politics. M. Gay de Montagnac, too, he loved as a brother; at the restoration, this gentleman was made governor of the chateau at Pau. It appears that his friendship with M. de Martignac, originated in a travelling acquaintance, which drew them together, and they afterwards kept up a continual correspondence, distinguished alike for sincerity, good feeling, and talent. Talma's style of writing was remarkable, as may be seen by a perusal of a "Notice" on Lekain, which was published, a perfect *chef d'œuvre* of sound reasoning, precision, and good taste. In the character of poet, too, Talma polished with a graceful and easy pen the parts allotted to him in new dramatic composition. How many authors have been indebted for their success to his advice! How many scenes have been finished from his ideas! It was M. de Martignac who sent him an account of the debut of Ligier at Bordeaux, and introduced him to Talma; and so rapid was his success that shortly afterwards the secretary of M. de Martignac, having accidentally met Ligier at Bordeaux, in getting into the same "diligence," observed, "Your progress is so rapid, Monsieur, that one must soon be content to pay you post chaise honors."

(To be concluded in our next.)

* This simple politesse has become a proverb in France.
Les honneurs de la chaise de poste.

THE THEATRES.

"See that the players be well used."—*Hamlet*.

"Nothing extenuate, nor set down aught in malice."—*Othello*.

COVENT GARDEN.—The return of the lovely Ellen Tree has caused this theatre to overflow every night of her performance, and all the management have now to do, is to count the money taken at the doors, and send it to their bankers. The principal performances of the week have been *Love*, the *School for Scandal*, the *Duchess*, admirably got up, and the *Beggar's Opera*; to witness all which, there has been a goodly company. There are several novelties in active preparation.

DRURY LANE.—MACREADY'S engagement promises to remunerate the worthy HAMMOND for his enterprising spirit. The getting up of *Macbeth* is in good taste, and the scenery very beautiful. It has been received with the same degree of enthusiasm as when last produced at Covent Garden. MACREADY'S reading of the character is good, and many of his points are fine; we could, however, well dispense with some of his bursts of passion, which split the ears, without producing their intended effect. On the whole, however, he sustains the part well. Of *Mary Stuart*, MR. HAYNES' new historical tragedy, we had written at considerable length last week, but, though in type, our space would not admit of the article being inserted. We are not sorry for this, for in truth the play is not worth the trouble of criticising.* A second visit has

* In commenting on this play, we had been mercilessly severe in some of our remarks; but a certain highly esteemed Mentor of ours, to whose matured and sensible opinions we shall ever deferentially bow, has made us somewhat alter our course. "That which is bad," said he, in conversation, "let it die of itself, as it assuredly will do; why should you make yourself an executioner?"

convined us, that though it has merit, it is of a very transient nature, and the play has been so grievously mutilated from what it was originally, to suit one actor only, that it is hardly fair to speak of it as a composition, neither is it needful to detail the plot, seeing that the author has deviated but little from the truth of history. The character of Ruthven, personated by MACREADY, is the principal feature, and he certainly renders it very effective, though at the same time it is very repulsive, and never once excites admiration. The hero even dies unregretted! *Mary Stuart*, by Mrs. WARNER, *Darnley*, by PHELPS, and *Catherine, Ruthven's daughter*, by Miss E. MONTAQUE, are all that deserve separate mention. The first was played as well as the character would admit of, for it was a bad conception of the author; the second deserves a similar remark, for Mr. PHELPS could do very little with it, though a clever actor; but the third was delightfully supported by Miss MONTAQUE, of whom, when she first appeared in *Juliet*, we spoke so favorably. The play was well received, and has been so every night of its performance, but its life will be short. It is full of inconsistencies throughout, and, as we have before said, it has been cut and hacked at the will and pleasure of Mr. MACREADY, who has made it answer his purpose very well. While such things are tolerated, we never can hope to attain excellence.

On Tuesday, the opera of *Fra Diavolo* was produced, to test the powers of Miss DELCY in *Zerlina*. Her voice exhibited the same sweetness we have before commended, but her shakes, and quavers, and demi-semi-quavers, &c., &c., were such as to set all laws of *harmony* at defiance. For this perverse taste, her very obstinate and self-willed papa is alone accountable; he commands, and his daughter, it seems, *must obey*. Miss DELCY, in her acting, is cold as marble; artificial throughout; her movements on the stage not proceeding in the slightest degree from *impulse*, but from a regularly prescribed method. FRASER, in *Fra Diavolo*, was much as usual. He caused many a smile at his acting, but made up in some degree by the unwonted pains he took to give effect to some of his songs. We shall best serve the interests of MR. ALLEN, who played Lorenzo, if we say nothing about him; the same kind remark will apply to the *Lord Alceste* of ROBERTS. Whatever faults there may be existing among our aristocracy, they are not so **very leaden** in their movements and notions as the actor would have us believe. His observation must have taken a very limited range indeed. The gentlemen of the orchestra deserve our good word. They executed the beautiful music of the opera with powerful effect, and were loudly applauded.

The ADELPHI, SURREY, VICTORIA, SADLER'S WELLS, and PAVILION, are all enjoying a most prosperous season. There seems to be a rivalry among the respective managers as to who shall produce the best bill of fare; this is the only proper way to fill a theatre with guests.

HER MAJESTY'S THEATRE will open in the middle of the present month, when will be produced, for the first time in this country, Donizetti's opera, entitled "Torquato Tasso," in which Mademoiselle Emelina Tosi (from the principal theatres in Italy), and Signor Coletti (the eminent Primo Basso from Lisbon) will sustain the principal parts. After this, will be revived the favorite ballet, "Les Pages du Duc de Vendome," in which Monsieur Bretin and Mademoiselle Albertine (from the Opera in Paris), will make their first appearance. In addition to other new dances, an increased and select company, composed of Monsieurs Mathieu and Gosselin; Mesdames Pierson, Copere, Briastoff, d'Orgeville, Galbi, E. Albertine, Duxy, d'Estrees, Maria, Desjardins, Delaunay, &c. In the first week in March, Fanny Elsler will appear in a new ballet, called "La Tarantule." Madame Persiani will appear in the course of the season in Bellini's

admired opera, "Beatrice di Tenda," and in "Inez di Castro," now performing with immense success in Paris. Madame G. Grisi will also appear in two new operas, highly successful in Italy, which are "Il Giuramento," and "Il Bravo," by Mercadante. Mademoiselle Taglioni is engaged for the new ballet, under the title of "L'Ombre." The most minute attention will be paid to the chorusses. Signor Mario is also engaged.

SHERIDAN KNOWLES has completed a new ballad opera for Covent-garden Theatre, which will be shortly produced; as will also Leigh Hunt's new five-act play, which has been some time in rehearsal, and is already announced in the bills. A principal part in it is said to be assigned to Mr. Moore, the late *debutant* in *Hamlet*.

THE TWO THEATRICAL FUND ANNIVERSARIES will be celebrated, as usual, at the Freemasons' Hall, Great Queen-street, at both of which his Royal Highness the Duke of Cambridge has kindly condescended to preside. The Covent-garden fund takes precedence this year, and will be celebrated on Wednesday, the 18th of March; and that of Drury-lane on Saturday, the 18th of the following month.

A meeting is announced for next Monday of the new renters of Drury-lane Theatre, for the purpose of electing three new trustees to represent their future interests, and enable them to require payment of their diminished income. Mr. George Robins has given the use of his large room for the new renters to congregate. The meeting is to be at half-past one.

ITALIAN OPERA IN PARIS.—The London papers state that the Italian Opera is expected to open there next month with Madame Grisi and other leading vocalists. This is evidently an error, for the Italians do not close here until the end of March, and till that period we can answer that none of the principal *artistes* will quit Paris. It is stated that the principal subscribers to the Italian Opera are about to meet for the purpose of appointing a committee to support the project in building a magnificent theatre in the Rue de la Paix, on the site of the Stamp-office. "The obstacles," it is said, "which were opposed by some gentlemen of the Foreign-office, which abuts against the building alluded to, being removed, and the Minister of the Interior appearing to be favorable to the plan, there is every reason to believe that the Italian company will again have a theatre in the centre of the capital."—*Galigani*.

PARIS.—The present theatrical season of the *Theatre de la Renaissance*, is indeed brilliant, and the zeal and activity displayed by the proprietors, richly merit public patronage. To say nothing of the production of the *Fille du Cid*, which has furnished occasion for the debut of three new artistes, they are preparing a magnificent piece in which we shall have to admire the exquisite vocal powers of Mlle. Charlotte Grisi, and her still more extraordinary talents in the department of Terpsichore; doubtless, Zingaro will produce from the enthusiasm which this charming actress invariably inspires, a rich harvest to the proprietors. Charlotte Grisi will likewise be the soul of song, and will dance in the *Angé de Nisida*, which is also in rehearsal at this theatre, and to which Donizetti has lent the full powers of his extraordinary talent. We have had the last representation of Mdme. Dorval at this theatre in the *Proscrit*, and deeply regret her loss.

Ambigu Comique.—Frederick SOULIE, whose talents are of too romantic an order to find favor at the *Theatre Français*, has found a foster parent to his new offspring in the above theatre. *L'Ourrier* is replete with all the interest which characterises the productions of this writer; and, although tinged perhaps a little too much with the *horrible*, (the scenes being laid in Paris during the most sanguinary period of the first revolution), is likely to become a valuable stock piece, and be even reproduced upon the London stage.

The *Vendetta*, resumed on the 22d at the Academie

de Music, draws overflowing houses. Madame STOLZ, strange to say, plays Duprez' character, *Paolo*, and what is more singular, plays it admirably well. Madame DORUS-GRAS, for whom the character of *Flora* was originally written, has reappeared in it, and we have remarked with sincere pleasure, a considerable improvement in her voice; her medium notes have acquired more distinctness, while the higher notes are, occasionally, of ravishing sweetness.

BRUSSELS.—The *Theatre Royal* is still in want of first-rate *artistes*, but the management does all in its power, until the final arrangements are made, to render its repertorium as various as the most *blast* stage-goer can desire. Tragedy, comedy, opera, ballet, and vaudeville, succeed each other, night after night, so that as far as variety is concerned, there is no lack.

ADVERTISEMENTS.

IMPERIAL KENT RAILWAY,—from GREENWICH TO WOOLWICH, DARTFORD, GRAVESEND, and ROCHESTER; with a view to its extension to the coast of Ramsgate and Margate.

The Capital is to be raised by the creation of £1,000,000 Stock, bearing Interest from the day of investment, at 5 per cent. per annum, payable Half-yearly, until the Railway to Rochester shall have been completed and opened to the public twelve months; after which the Dividends will be paid out of the net profits of the undertaking. The money, as subscribed, to be invested in the name of the Trustees, in Exchequer Bills or other Government Securities.

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The promoters of this undertaking feel it necessary to inform the public that they have deemed it advisable, for the present, to make the terminus of the proposed railway at Rochester. The line will pass through Woolwich, Dartford, Gravesend, and Rochester, and it cannot be doubted, will be soon extended to other large towns in the county of Kent, thus connecting the Metropolis with the most important and populous towns in that county.

The opinion of a Committee of the House of Commons on the proposed line, is fully expressed in their report to the House, which states that "It appears to be a line which, as connecting the ports of Ramsgate, Margate, and other large towns in the county of Kent, with London, and showing public advantages, may, for such purposes, entitle it to consideration;" since which, a report has been made to Government, of the eligibility of these ports as harbours of refuge.

On this suggestion, they have, after mature deliberation, resolved on the above plan; and they do so, under a firm conviction that the importance of such Harbours, and the ready access which is from thence afforded to a wide range of the opposite coasts of France and the Netherlands, amply entitle them to participate, thus prominently, in the improved system of communication now in course of adoption throughout the country.

In other respects, the proposed enterprise deviates in no material point from the plan originally submitted to the public.—Running through a cultivated and densely-peopled country, embracing in its course the Government dépôts of Woolwich and Chatham, its advantages, as well in a National as in a Commercial point of view, are too obvious to require comment.

It is intended to commence working this line of road as soon as the first three miles from Greenwich to Woolwich shall be completed, and so on in succession, as finished, to Dartford, Gravesend, Rochester, and other towns, until it shall have reached the coast; by which, and other contemplated financial arrangements, the payments of the Five per Cent. Dividends will be amply provided.

It is also intended that the Plans and Working Drawings which are made of the respective divisions of the line to Rochester, shall be contracted for, contingent on the passing of the Act, previous to application to Parliament, by which no excess of estimates can arise.

As an investment for capital, this undertaking may vie with any similar project; for when it is borne in mind that the transit of passengers has been proved, before a Committee of the House of Commons, to be the most lucrative branch of railway revenue, and that, excluding all other modes of conveyance, between London, Gravesend, Rochester, Margate, and Ramsgate, we may fairly add the immense increase of intercourse by passengers landing after long voyages, persons going to the Continent, sea-bathers, parties of pleasure, and men of business, the last of whom may arrive in town at their usual business hours, after enjoying the benefits of the sea-air, some idea may be formed of the extent to which returns may fairly be expected to repay the construction of a railroad through districts already abounding in every description of traffic, and which an increased facility of intercourse is calculated still further to augment.

The capital required to execute the Work to Rochester is ONE MILLION, part of which will consist of the exchange of the amount of the respective Shares held by the Proprie-

tors of the late Kent Railway, provided to the extent of one-half of the amount so exchanged be also taken in Stock of the present Company.

It may be necessary to explain, that this novel plan of raising the Capital by the creation of Stock instead of shares, and paying Interest during the execution of the Works, has been adopted in order to avoid the fatal consequences and impediments to all new undertakings, from the ruinous system lately resorted to by various companies, in raising additional capital by the issuing of new shares (in many cases at 60 per cent. discount), thereby creating an enormous nominal capital, on which dividends must be paid, to the manifest injury and injustice of a large proportion of the original Subscribers, whose means having been exhausted in fulfilling their original contract, cannot avail themselves of the proffered bonus held out to them of taking the new shares at a discount, and they are thereby compelled to leave all such advantages to their more fortunate and wealthy brother Shareholders.

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When the Dividends arising from the Profits shall exceed 10 per cent. per annum, the rate of tolls per mile shall be reduced, so that the Public may participate in the benefits of this important national undertaking.

The Plans, Sections, &c., being lodged in the Private Bill Office, the Bill will be brought in early in the following Sessions of Parliament.

All further particulars may be obtained at the Offices of Mr. Walter, 24, Cornhill.

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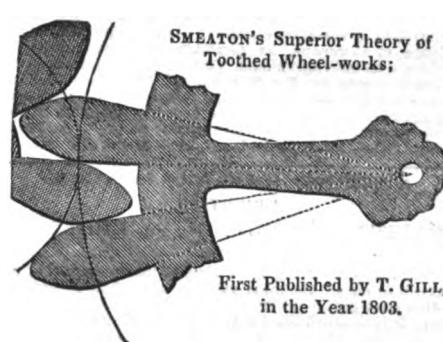
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THE

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No. 27.]

SATURDAY, FEBRUARY 8, 1840.

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[CIRCULATING FREE BY POST.

ON THE PATENT LAWS OF ENGLAND.

(Continued from our last.)

ALTERATIONS AND DISCLAIMERS.

UNTIL the Act 5 and 6 of William 4, Cap. 83 passed, a patentee was unable to make the slightest variation or amendment in his patent, after it had passed the great seal, or in his specification after it had been unrolled; patent rights, therefore, were not only endangered, but frequently destroyed, by trifling mis-descriptions in the title of the invention, in the letters patent, or by clerical errors or defective explanations in the specification. The first section of the act to which we have referred, provides a commensurate remedy for those evils, for it declares, that any person who as grantee, assignee, or otherwise, hath obtained, or shall hereafter obtain, letters patent for any invention, may, if he think fit, enter with the clerk of the patents of England, Scotland, or Ireland, respectively, as the case may be, (having first obtained leave of the Attorney or Solicitor-general on an English patent, of the Lord-advocate or Solicitor-general of Scotland in the case of a Scotch patent, or of the Attorney or Solicitor-general for Ireland, on an Irish patent, certified by his fiat and signature) a DISCLAIMER of any part of either the title of the invention, or of the specification, stating the reason of such disclaimer; or may, with such leave, enter a memorandum of ANY ALTERATION in such title or specification, not being such disclaimer or alteration as shall extend the exclusive right granted by the letters patent; and the disclaimer, or memorandum of alteration, being filed by such clerk of the patents and enrolled with the specification, shall be taken to be part of the letters patent, or specification in all courts whatever. It should be especially observed, that no disclaimer or alteration which would have the effect of extending the patent right is authorised by the enactment: difficulties may therefore arise in the legal construction of disclaimers or alterations, and on the consequences of any defects therein, as the act makes them part of the letters patent. Some of our readers may be startled to know, that there have been instances of gross fraud perpetrated even under the above enactment, which was made "as well for the better protecting of patentees in the rights intended to be secured by letters patent, as for the more ample benefit of the public from the same." The inquiry may be suggested, how can dishonesty have appropriated such a provision to an unhallowed purpose? We reply, by intentionally including in a patent that which would render it invalid, for the purpose of defrauding persons of

money for licence to exercise such part of the invention, under an authority speciously framed, and, after that object has been attained, iniquitously disclaiming the right to so much of the invention under the letters patent.

A disclaimer and memorandum of alteration filed and enrolled under this act, will not enable a patentee to maintain an action for an infringement committed before the enrollment, although the part of the invention referred to by the disclaimer is not the part infringed; because the letters patent until such disclaimer were defective. A disclaimer, or alteration, has not a retrospective operation so as to become part of the original patent, but only from thenceforth.—Now if this be the true construction of the act, it seems to follow, that the legal defect of a disclaimer, or memorandum of alteration, annexed to letters patent, would only avoid the disclaimer or alteration itself, and not the entire grant; and such definition appears also consonant with justice.

We have remarked, that prior to this act valuable patents were frequently defeated by the most unintentional errors in description; and in confirmation, we have only to refer to the proceedings on Brunton's patent of 1813, for improvements in the construction of ships' anchors and windlasses, and chain cables or moorings, which was tried before Lord Chief Justice Abbott, on 25th May, 1820, when a verdict was found for the patentee; that verdict, however, was afterwards set aside, and a new trial ordered, on the ground that the validity of the patent could not be maintained, because the anchor, one part of the invention, was not new. The Chief Justice observed, "It is with great reluctance that my mind has at length come to a conclusion, which (as far as my judgment goes) will have the effect of avoiding this patent. It appeared in evidence that the mode of making chain cables and anchors introduced by the plaintiff into general use, is highly beneficial to the public, and I wish he could sustain his patent. I feel compelled to say that the anchor is not new, and that the whole patent is therefore void." A patent for a machine, each part of which was in use before, but in which the combination is new, and a new result thereby produced, is good, because there is novelty in the construction.

Ships' anchors are commonly made of the shank and two arms, united in three pieces. Brunton formed the two arms in one piece, with a hole through them, to receive the end of the shank, which was put through, and the end riveted. If the union of those two pieces had been effected in a mode unknown before, as applied in any degree to a similar purpose, it would have been a good patent, but unfortunately it had been already known and practised. A patent cannot be main-

tained for uniting two parts instead of three, where the union is effected by a method previously known for a like purpose. There can be no question, that this patentee conscientiously believed himself to be the inventor of the improvement in the construction of the anchor, as well as of the other parts described in the specification:—it is evident he had intended no fraud,—that he had not purposely deceived the crown, by representing himself as the inventor of more than he thought himself entitled to,—and it was considered that he was the first inventor of the chain cable mentioned in his specification; and yet under the law, as it then stood, he had no means of preserving his right even to that portion of the invention, by disclaiming his exclusive privilege to the anchor:—the patent being bad in part, was then irretrievably bad in toto. Under circumstances, such as we have noticed, the authority to alter, or disclaim an objectionable portion of a patent, or specification, is of paramount importance to inventors, and the public.

Any person may enter a caveat against disclaimers and alterations, which will entitle him to have notice of the application being heard by the Attorney or Solicitor-general, or Lord-advocate; and the person applying for leave to enter a disclaimer or alteration may be required to advertise the same, in such manner as the Attorney or Solicitor-general, or Lord-advocate, shall order.

(To be Continued.)

ON THE FILTRATION OF WATER.

Whatever progress may have been made in the theory of filtration, it is very far from being perfect in practice. The experiments which have been made of late years in Great Britain, afford useful lessons. In Glasgow, for instance, it is by millions that we must reckon the sums expended upon this subject. Yet the results have never corresponded with the expectations of those who engaged in the enterprise. The filters have invariably become foul, and have at last ceased to be of any service at all. The principal object then in the filtration of water, is to be able to cleanse the filter at all times, and to replace with fresh sand, that which has become foul and unfit for use.

The Chelsea Company is the only one out of the eight great companies for the supply of water in London, which distributes filtered water; and their plan is as follows. The water is brought successively into three large basins, which communicate with each other; in the two first, it is allowed time to deposit the grosser parts of its sediment, and

it then passes through a thick bed of sand and gravel in the third, by which it is finally purified. When this third basin is empty, men are employed to rake off the top of the bed, which has been spoiled by the sediment from the water, and to replace it with fresh sand. But though the bed of sand is six feet thick, it must by degrees be choked up, and in process of time there will be a necessity for renewing it entirely. This necessity, had it been foreseen, would have required the construction of a fourth basin similar to the third; but when we consider that this basin occupies an acre of ground, that the expense of making it is 3,000 or 4,000 francs, and that the manual labor, which costs every year 25,000 francs, would have been increased, we can not wonder at the oversight.

To cleanse the mass of sand, therefore, was the great object to be attained. In 1828, Mr. Robert Thom introduced at Greenock an entirely new method of cleansing the filter. According to his plan, the basin, in which the water purifies itself, contains a bed of sand five feet thick; but the water can come into this basin either above or below. In general, it is admitted above, but as soon as any obstruction is perceived, the water is let into the basin from below, and thus, acting like a spring, it carries off all foul and extraneous matter. In this way the filter may be cleansed at pleasure. The quantity of pure water supplied by this establishment is a million and a half of quarts per day; and it furnishes 25,000 inhabitants, on an average, with 56 quarts and a half for each individual every twenty-four hours.

An important improvement upon Mr. Robert Thom's plan has been introduced by M. Henri de Fonvielle, according to whose design the filter of the Hotel-Dieu at Paris was constructed, which has been in operation since 15th January, 1836. This improvement consists in the employment of a strong pressure to accelerate the passage of the water through the sand. Formerly, the water passed through the filter in a small volume without much rapidity. Now, under the action of a very considerable pressure, a filter of the same surface produces a much greater quantity in the same time. Under the pressure of an atmosphere and a sixth, the filter of the Hotel-Dieu produces 17 times more pure water than the common filters. For every superficial metre, it gives 95 quarts a minute. Though the forcing pump containing the water which causes the pressure, is not always in action, this filter supplies daily at least 50,000 quarts of pure water.

The advantage of this process is evident: but, it may be asked, is it not to be feared that a filter which purifies seventeen times more water in the same space of time, must become foul so much the sooner in proportion? We reply, that in a filter, where the water is subject to a strong pressure, it is not only the surface of the sand, but the whole mass which acts upon it; and experience has proved that this fear is altogether without foundation. The method used by M. de Fonvielle for cleansing the filter, is equally deserving of attention. He admits the water both from above and below at the same time, and this double current is much more effective than the single one of Mr. Robert Thom. The progress made by M. de Fonvielle in the art of filtration is very important, and may be regarded as the practical application of all those improvements which, at different times have been suggested. The principle of allowing the water, time to deposit its sediment, was put in practice by M. Cordier of Bezieres, by M. Bareyre of Bourdeaux, and by M. Renaux. A bed of coal between two beds of sand constituted the ancient filter for which Messrs. Smith, Cuchet, and Montfort, obtained a patent. We trace the first idea of employing pressure in the filters of M. Ducommun; to which may be added the hand-filter of M. Suverges, although it can never be of any very great utility. Nor must we forget the process for purifying water by means of mineral cleansing, proposed by M. Parrot in the eighth volume of his *Annales des Mines*.

As we have been led to speak of the supply of water in large cities, we cannot close this article without saying a word or two about the inconveniences sometimes attendant upon cast iron pipes; and this subject is interesting to every branch of industry, in which cast iron pipes are used for the conveyance of water. The inside of these pipes is sometimes covered with ferruginous particles, to such an extent as quite to obstruct the passage of the water. The city of Grenoble is supplied with a portion of the water which it consumes by means of cast iron pipes, which communicate with the *Chateau d'eau*. In 1826 this fountain gave 1,400 quarts a minute; and in 1833 only 720; and this extraordinary decrease was entirely owing to the quantity of ferruginous particles which choke up the pipes. The pipes of the conduit at Vicky, also, at the end of twenty-six years, are almost totally useless from the same cause. The water which passed through them did not carry off a single particle of iron.

The committee of engineers, amongst whom was M. Vicat, assembled at Grenoble, proved that this inconvenience might be prevented by lining the inside of the pipes with a layer of hydraulic mortar. On the other hand, Sir John Herschel advised Mr. Chicholm to line with Roman cement the cast iron pipes which convey the water to the city at the Cape, and the plan succeeded admirably. Thus, experiments ably conducted are daily adding to our knowledge.

J. C.

EXPIRED PATENTS.

A LIST OF PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING FEBRUARY 1, 1840.

ENGLAND.

Not a single patent has expired during the week.

ON THE PUBLICATION OF SPECIFICATIONS.

NOTICE.

In accordance with the determination expressed in our 26th number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of the 29th instant. Each party will receive, in addition, a private communication to the same effect.

ENTERED AT THE ENROLLMENT OFFICE.

ALEXANDER COCHRANE, late of Arundel-street, Strand, now 33, Alfred street, Bedford-square, an improved lock, Jan. 3.

ALEXANDER CRUCKSHANKS, Liverpool-street, New-road, certain improved methods of producing or manufacturing certain inflammable substances, and of applying the heat and light derived from certain inflammable substances to various useful purposes, Jan. 3.

EDMUND JOHN JONES, Poulston-house, Hereford, and JOHN HAM, Bristol, Somerset, engineer, an improved process of manufacturing cider and perry, Jan. 4.

JOHN FAIRRIE, Church-lane, Whitechapel, sugar refiner, improvements in making and refining sugar, Jan. 4.

JOHN ERICSSON, Cambridge-terrace, Edgeware-road, civil engineer, an improved engine, particularly applicable to locomotive purposes and steam navigation, Jan. 6.

PETER ROTHWELL JACKSON, Great Bolton, Lancaster, a new and improved method of mangleing, cal-

lendering, glazing, and finishing cotton, and certain machinery to effect the same, Jan. 8.

EDWARD FRANCOIS JOSEPH DUCLOS, Clyne-wood-works, Swansea, improvements in the manufacture of sulphur, sulphuric acid, and sulphate of soda, Jan. 11.

THOMAS BELL, St. Anstell, Cornwall, hotel-keeper, improvements in obtaining copper from copper slag, Jan. 11.

WILLIAM WOODLEY, Observatory-house, Woodbury Vale, Stoke Newington, certain improvements in propelling vessels and carriages, and other machinery, Jan. 13.

DANIEL RAMEE, Paris, and 3, Charlotte-street, Bloomsbury, improvements in paving roads, and such like ways, Jan. 15.

JOHN REYNOLDS, Bridge-street, Blackfriars, certain improvements in the manufacture of salt, Jan. 16.

JOHN CHARLES SCHEVIESO, Albany-street, Regent's Park, certain improvements in the construction of locks, Jan. 16.

JOHN JONES, Westfield, Sheffield, York, commercial traveller, improved table knife, Jan. 16.

JOHN HEMMING, Edward-street, Cavendish-square, improvements in gas-meters, Jan. 16.

JOHN GEORGE SHUTTLEWORTH, of the Mount, near Sheffield, soap-boiler, a new mode of obtaining rotary motion from the rectilinear motion of the piston rod of a steam or other like engine, Jan. 18.

CHARLES FLUDE, Liverpool, Lancaster, certain improvements in the manufacture of white lead, Jan. 20.

THOMAS NICHOLAS RAPER, Bridge-street, Blackfriars, improvements in rendering fabrics and leather waterproof, Jan. 20.

EDWARD BROWN, Lyme Regis, Dorsetshire, ironmonger, improvements in apparatus used in cooking, Jan. 20.

MOSES POOLE, Old-square, Lincoln's-inn, improvements in casting for printing purposes, Jan. 20.

PETER ROBERT DRUMMOND, LORD WILLOUGHBY DE EBENEY, improvements in compressing peat, Jan. 20.

JOSHUA CROCKFORD, Litchfield-street, Soho, an improved method of applying cotton and other wicks to tallow, and other like substances, and for candles, in order to consume the same, Jan. 20.

ALEXANDER SOUTHWOOD STOCKER, Union Rolling Mills, Birmingham, and THOMAS JOHNSON, of Ridgire Iron Works, Stafford, certain improvements in machinery for manufacturing shoe-heels and toe-tips, Jan. 20.

SAMUEL GUPPY, Bristol, merchant, improvements in a certain process and apparatus used in the manufacture of soap, Jan. 21.

JOHN MERCER, Oakenshaw, Lancaster, calico printer, JOHN DYNELEY PRINCE, Manchester, and WILLIAM BLYTHE, of Church, Lancaster, manufacturing chemist, certain improved processes to be used in the printing, dyeing, or coloring of cotton, woollen, silk, or other cloths and yarns, Jan. 27.

WILLIAM COLCHESTER, Ipswich, merchant, an improved soap-frame, Jan. 27.

PIERRE JACQUES FERIER, Paul's-chain, St. Paul's Churchyard, jeweller, certain improvements in the construction of vapor and hot air baths, Jan. 31.

CHRISTOPHER NICKELS, York-road, Lambeth, improvements in cutting india-rubber, Feb. 1.

LOUIS FRANCOIS FEUILLET, George-yard, Lombard-street, improvements in casting types for printing, Feb. 1.

WILLIAM ABBOTT, Wyndham-place, Middlesex, improvements in the manufacture of felt, Feb. 1.

JOSEPH WEBB, Huddersfield, improvements in machinery for raising the pile of woollen and other cloths, Feb. 1.

ROLLS CHAPEL.

JOHN FREDERICK MYERS, Albemarle-street, Piccadilly, musical instrument maker, and **JOSEPH STOVER**, Bidborough-street, New-road, musical instrument maker, certain improvements in the construction of certain musical instruments, part of the said improvements being applicable to those of the kind commonly called pianofortes, and part to those of the kind commonly called seraphines, and to certain descriptions of organs, Jan. 20.

THOMAS KNOWLES, Manchester, cotton spinner, certain improvements in machinery or apparatus used in the preparing of cotton and other fibrous substances, Jan. 30.

WILLIAM MILLER, of Clithero, Lancaster, engineer, certain improvements in grates used in steam-engines, or other furnaces, or fire-places, Jan. 30.

SIR JOHN SCOTT LILLIE, Kensington, knight, certain improvements in the application of elastic fluids to the working of machinery, Feb. 1.

PETTY BAG OFFICE.

ARTHUR PARSEY, Quadrant, Regent-street, artist, improvements in obtaining motive power, Dec. 6.

JOHN MOORE, Broad Weir, Bristol, an improvement or improvements in the steam-engine or steam-engine apparatus, Feb. 1.

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED FROM JULY 1ST, TO DECEMBER 31ST, 1835.

N. B. Those Patents that have been also secured in Scotland are indicated by * before the names of British Patentees (see opposite.)

(Continued from page 51.)

Animal charcoal, August 17, Bowman, F.
Anti-attrition,—see Paste, P. N.
Artillery,—see Fire-arms, M. W.
Axletrees,—see Wheels, M. W.
Bearings,—see Cylinders, M. W.
Bobbin-net lace, October 1, Henson, W. S.
Bobbin-net lace, December 2, Milnes, T. B.
Bobbin-net lace, ornamental, July 30, Crofts, W.
Bobbin-net lace, December 9, Bertie, J.
Bobbin-net lace, &c., November 4, Crofts, W.
Bobbin-net lace, December 2, Sewell, T. R.
Boilers for steam, &c., September 24, Spiller, J.
Bolts,—see Screw, G. R.
Boots and Shoes, August 22, Johnson, W.
Brandy, December 22, Bettis, J. T.
Bricks and tile making, August 10, Jones, E.
Building materials, December 3, Witty, R.
Buttons, November 28, Jefferies, H.
Calendering, stiffening, &c. woven goods, July 28, Charlton, R. and A.
Carding cotton, &c., December 31, Hyde, J.
Carding cotton, &c., August 6, Faulkner, S.
Carding cotton, &c., December 9, Kenyon, J.
Carriages, retarding, December 31, Blyth, J.
Charcoal,—see Animal, B. F.
Clarifying or fining liquida, October 22, Dyer, J.
Clarifying and bleaching raw cane and saccharine juices, September 1, Saunders, J. F.
Coal-box, August 12, Wright, W. E.
Cocks,—see Cylinders, M. W.
Colored steel, &c. engravings, Oct. 23, Baxter, G.
Colored patterns transferred to earthenware, china, glass, &c., December 3, Potts, W. W.
Colors for printing cotton, &c., Dec. 10, Simpson, L.
Combustion apparatus,—see Ventilating, D. J. C.
Condensing steam-engines rendered portable for railway and other roads, Aug. 10, Nicholl, S. W.
Consuming smoke, &c.—see Furnaces, C. R.
Copper from ores, December 22, Troughton, N.
Cylinders, pistons, bearings, pumps, &c., Aug. 6, Mason, W.
Depth of seas ascertained, Nov. 14, Ericsson, J.
Diving apparatus, November 14, Fraser, J. W.

Docks and quays to abridge labor, November 5, Adcock, H.
Drawing and slubbing frames, Dec. 9, Houldsworth, J.
Earthenware,—see Colored patterns, P. W. W.
Embossing and printing on calico, &c., Nov. 10, Gregg, T.
Embroidering machine, Nov 14, Milnes, T. B.
Engravings on steel, &c.—see Colored, B. G.
Extinguishers to candles, July 3, Walker, T.
Feather cleaning, December 31, Wright, T. I.
Fermentation, process of, Nov. 17, Sheridan, J. J. C.
File-making, August 25, Appleby, C.
Files and rasps making, July 17, Vickers, W.
Fire-arms and artillery, August 6, Mason, W.
Fire-arms, October 22, Colt, S.
Fluids to various purposes,—see Ventilating, D. J. C.
Flour-mills, August 10, Herbert, L.
Furnace for consuming smoke, &c., November 2, Gray, J.
Furnaces for consuming smoke, &c., July 10, Coad, R.
Gas-burners,—see Lamps, C. H. B.
Gas, purifying, Aug. 17, Phillips, H.
Harps, Dec. 18, Erard, P.
Heald of metal for weaving, December 16, Osbaldeston, J.
Hinges, July 24, Horne, T.
Horse-shoe making, &c., Oct. 8, Jerons, T.
Ink, printers', paints, &c., October 15, Bird, J.
Iron, &c., December 9, Dawes, J. S.
Iron, bar or malleable, October 22, Mushet, D.
Knitting machine, November 10, Whitworth, J.
Labor abridged,—see Docks, A. H.
Lace or net, getting up, December 16, Topham, O.
Lamps, gas-burners, July 28, Chausenot, H. B.
Lamps, and producing light, Dec. 3, Deville, J.
Light, producing,—see Lamps, D. J.
Liquida,—see Clarifying, D. J.
Lock and key, December 16, Warwick, J.
Locomotive machinery, November 5, Dundonald, Earl of.
Locomotive and other engines, December 16, Carpmael, W.
Locomotive carriages, December 16, Coles, W.
Looms, hand and power, October 1, Bullough, J.
Looms for weaving, October 8, Scattergood, J.
Looms, hand and power, July 28, Anderson, S. R.
Looms for weaving, December 5, Berry, M.
Manure,—see Night-soil, P. J. H. J.
Manuring land,—see Sowing, K. W.
Mechanical power, August 24, Schwartz, T.
Mills,—see Flour, H. L.
Motive power for railways, &c., Aug. 17, Pinkus, H.
Musical instruments, December 21, Howell, T.
Night-soil powder, for disinfecting and for producing manure, July 17, Poitevin, J. H. J.
Ornamental flower and other stands, October 9, Jupe, R.
Oxidizing animal substances, December 15, Hempele, F.
Paddle-wheels, August 18, Galloway, E.
Paddle-wheels, July 10, Rogers, J.
Paddle-wheels, July 9, Vint, H.
Paints, &c.,—see Ink, printers', B. J.
Paints, mixing oil, December 8, Partridge, N.
Paper-making, July 24, Tyers, W. I.
Paste, anti-attrition, December 7, Partridge, N.
Pens and presses for ruling and pressing paper, August 17, Banks, W.
Pianofortes, and other keyed instruments (extension of patent for seven years), December 31.
Pins,—see Wire pointing, B. J.
Pin-making, October 22, Slocum, S.
Pistons,—see Cylinders, M. W.
Ploughs, November 2, Ransome, R.
Presses, &c.,—see Pens, B. W.
Printing Calicos, &c., December 3, Woodcroft, B.
Printing on calico,—see Embossing, G. T.
Printing silks, &c., November 24, Chapman, C. P.
Propelling vessels, December 21, Paterson, J.
Propelling by steam, &c., Nov. 7, Symington, W.
Propelling boats, ships, &c., July 10, Busk, W.
Propelling vessels, July 13, Maberley, F. H.

Pumps, December 29, Fussell, J.
Pumps,—see Cylinders, M. W.
Railroads,—see Sleepers, P. T.
Reels for reeling, October 22, Barber, R.
Saccharine matter,—see Fermentation, S. J. J. C.
Saccharine juices,—see Clarifying S. J. F.
Scouring and cleansing, Nov. 5, Whitehead, J.
Screw and bolt making, Dec. 16, Griffiths, R.
Seas, &c.—see Depth, E. J.
Ship-building and working, Aug. 26, Higgins, J. L.
Sleepers or bearers to railroads, Dec. 3, Parkin, T.
Slubbing frames,—see Drawing, H. J.
Small-ware, making, Sept. 24, Westhead, J. P.
Smelting iron, &c., October 8, Devaux, C. P.
Soap-making, September 17, Sheridan, J. J. C.
Sowing corn and manuring land, Nov. 2, Keene, W.
Spinning flax, &c. December 16, Dewhurst, D.
Spinning machinery, July 17, Smith, J.
Spinning, &c., silk, August 17, Shute, T. R.
Stands,—see Ornamental, J. R.
Steam,—see Propelling, S. W.
Steam-gauge, December 4, Radley, J.
Steam-engines,—see Condensing, N. S. W.
Steam-engines, August 24, Lucy, W.
Sugar-cane,—see Clarifying, S. J. F.
Tanning, new material for, Oct. 22, Patterson, W.
Throstle-flyer for spinning, July 3, Kean, J.
Tile-making,—see Bricks, J. E.
Tiles for roofs, August 17, Sheppard, R.
Veneers,—see Woods, S. J.
Ventilating mines, combustion, &c., August 10, Douglas, J. C.
Vessels,—see Propelling, B. W.
Vessels, &c., raising sunken, Oct. 15, Fraser, J. W.
Walls, ornamental, November 14, Troughton, N.
Waterproof fabric, December 7, Sievier, R. W.
Waterproofing fabrics, November 28, Hellowell, J.
Weaving machine, December 24, Heathcot, J.
Weaving, &c., October 15, Draper, S.
Weighing machines, July 11, Kuppler, C. G.
Wheels for carriages, &c., August 14, Day, J.
Wheels, boxes and axletrees, Sept. 24, Mason, W.
Wire, pointing, for cards and pins, Oct. 29, Birkby, J.
Woods, cutting, for veneers, Dec. 29, Skinner, J.
Woollen cloths, process of heating, Oct. 1, Hoare, E.

BRITISH PATENTEES.

AN ALPHABETICAL LIST OF INDIVIDUALS WHO HAVE TAKEN OUT PATENTS IN ENGLAND, FROM JULY 1, TO DEC. 31, 1835.

N. B. In the following list, the * before the name indicates that the Patent is also taken out in Scotland.

Adcock, Henry, Docks and quays to abridge labor, November 5.
Anderson, Spole R., Hand and power looms, July 28.
Appleby, Charles, File-making, August 25.
* Baillie, John,—see, Paterson, John.
Banks, William, Pens and presses for ruling and pressing paper, August 17.
Barber, Richard, Reels for reeling, October 22.
Baxter, George, colored steel, &c., engravings, October 23.
* Berry, Miles, Power looms for weaving, Dec. 5.
Bertie, John, Bobbin-net lace, December 9.
Betts, John, T. Brandy, December 22.
Bird, John, Printer's ink, paints, &c., October 15.
* Birkby, John, Wire pointing for cards and pins, October 29.
Blyth, John, Retarding carriages, December 31.
Booth, Henry, Attaching railway carriages, Dec. 16.
* Bowman, Frederick, Animal charcoal, Aug. 17.
* Bullough, James, Hand and power looms, Oct. 1.
* Busk, William, Propelling boats, ships, July 10
Carpmael, William, Locomotive and other engines, December 16.
Chanter, John,—see, Gray, John.
Chapman, Charles, P., Printing silks, &c., Nov. 24.

- Charlton, Robert and Alfred, Calendering, stiffening, and finishing woven goods, July 28.
- * Chaussenot, Henry B., Lamps, gas burners, July 28.
- * Coad, Richard, Consuming smoke and economising fuel in furnaces, July 10.
- Coles, William, Locomotive carriages, Dec. 16.
- Colt, Samuel, Fire-arms, October 22.
- Crofts, William, Ornamented bobbin-net lace, July 30.
- Crofts, William, Bobbin net lace, &c., Nov. 4.
- Cropper, James,—see Milnes, Thomas B.
- Dawes, John S., Iron, &c., December 9.
- Day, John, Wheel for carriages, &c. Aug. 14.
 - Devaux, Charles P., Smelting iron, &c., Oct. 8.
 - Deville, James, Lamps, producing light, Dec. 3.
 - Dewhurst, Daniel, Spinning flax, &c., Dec. 16.
 - Dickinson, John,—see Tyers, William I.
 - Douglas, John C., Ventilating mines, &c.—An apparatus for carrying on combustion—fluids to various purposes, August 10.
 - Draper, Samuel, Weaving, &c., October 15.
 - Dundonald, Earl of, Locomotive machinery, November 5.
 - Dyer, John, Fining or clarifying liquids, Oct. 22.
 - Dyer, Joseph C.—see Smith, James.
 - Erard, Pierre, Pianofortes, and other keyed instruments, (extension of patent for seven years), December 31.
 - Erard, Pierre, Harps, December 18.
 - Ericsson, John, Ascertaining depth of seas, &c., November 14.
 - Faulkner, Samuel, Carding cotton, &c., Aug. 6.
 - Fraser, John W., Raising sunken vessels, &c., October 15.
 - Fraser, John W., Diving apparatus, Nov. 14.
 - Fussell, John, Pumps, December 29.
 - Galloway, Elijah, Paddle-wheels, August 18.
 - Gordon, Alexander,—see Deville, James.
 - Gray, John, Furnace for consuming smoke, &c., November 2.
 - Gregg, Thomas, Embossing and printing on calico, &c., November 10.
 - Griffiths, Robert, Screw and bolt making, December 16.
 - Heathcot, John, Weaving machine, December 24.
 - Hebert, Luke, Flour-mills, August 10.
 - Hellewell, James, Waterproofing fabrics, Nov. 28.
 - Hempel, Frederick, Oxidizing animal substances, December 15.
 - Henson, William S., Bobbin-net lace, October 1.
 - Higgins, John L., Ship-building and working, August 26.
 - Hoare, Edwin, Process of heating woollen cloths, October 1.
 - Hope, Thomas, Joseph, and Isaacs,—see, Dewhurst, Daniel.
 - Horne, Thomas, Hinges, July 24.
 - Horsfall, Jeremiah,—see Kenyon, James.
 - Houldsworth, John, Drawing and slubbing frames, December 9.
 - Howard, Apelles,—see Scattergood, John.
 - Howell, Thomas, Musical instruments, Dec. 21.
 - Hyde, John, Carding cotton, &c., December 31.
 - Jefferies, Humphrey, Buttons, November 28.
 - Jerons, Thomas, Horse-shoe making, &c., Oct. 8.
 - Johnson, William, Boots and shoes, August 22.
 - Jones, Edward, Brick and tile making, August 10.
 - Jupe, Robert, Ornamental flower and other stands, October 9.
 - Kean, James, Throstle flyer for spinning, July 3.
 - * Keene, William, Sowing corn and manuring land, November 2.
 - Kenyon, James, Carding cotton, &c., Dec. 9.
 - Kuppeler, Conrad G., Weighing-machines, July 11.
 - * Lucy, William, Steam-engines, August 24.
 - Maberley, Frederick H., Propelling vessels, July 13.
 - Mason, William, Wheels, boxes, and axletrees, Sept. 24.
 - Mason, William, Steam Machinery, cylinders, pistons, bearings, pumps, and cocks, August 6.
 - Mason, William, Fire-arms and artillery, August 6.
 - Milnes, Thomas B., Embroidering machinery, November 14.
 - Milnes, Thomas B., Bobbin-net lace, December 2.
 - Mushet, David, Bar or malleable iron, Oct. 22.

Nicholl, Samuel W., Condensing steam-engines rendered portable for railway and other roads, August 10.

Osbaldston, John, Metal heald for weaving, December 16.

Parkin, Thomas, sleepers or bearers to railroads, December 3.

Partridge, Nathaniel, Paste, anti-attrition, Dec. 7.

Partridge, Nathaniel, Economy in mixing oil paints, December 8.

 - Paterson, John, Propelling vessels, December 21.
 - Patterson, William, Tanning, new material for, October 22.
 - Phillips, Henry, Purifying gas, August 17.
 - Pinkus, Henry, Motive power for railways, &c., August 17.
 - Poitevin, Joseph H. J., Powder for disinfecting night-soil, and for producing manure, July 17.
 - Potts, William W., Colored patterns transferred to earthenware, china, glass, &c., Dec. 3.
 - Radley, James, Steam-gauge, December 4.
 - Ransome, Robert, Ploughs, November 2.
 - Rogers, John, Paddle-wheels, July 10.
 - Saunders, James F., Clarifying and bleaching raw cane and saccharine juices, September 1.
 - Scattergood, John, Looms for weaving, Oct. 8.
 - Schwartz, Theodore, Mechanical power, Aug. 24.
 - Sewell, Thomas R., Bobbin-net lace, December 2.
 - Sheppard, Richard, Tiles for roofs, August 17.
 - Sheridan, John J. C., Soap-making, Sept. 17.
 - Sheridan, John J. C., Process of fermentation, November 17.
 - Shane, Thomas R., Spinning, &c. silk, Aug. 17.
 - Siever, Robert W., Waterproof fabric, Dec. 7.
 - Simpson, Lightly, Colors for printing cotton, &c., December 10.
 - Skinner, Joseph, Cutting woods for veneers, &c., December 29.
 - Slocum, Samuel, Pin-making, October 22.
 - Smith, James, Spinning machinery, July 17.
 - Spiller, Joel, Boilers for steam, &c., Sept. 24.
 - Springall, John,—see Ransome, Robert.
 - Symington, William, Propelling by steam, &c., November 7.
 - Topham, Ovid, Getting up lace or net, Dec. 16.
 - Troughton, Nicholas, Ornamental walls, &c., November 14.
 - Troughton, Nicholas, Copper from ores, Dec. 22.
 - Tyers, William I., Paper-making, July 24.
 - Vickers, William, Files and rasps, making, July 17.
 - Vint, Henry, Paddle-wheels, July 9.
 - Walker, Thomas, Extinguishers to candles, July 3.
 - Warwick, John, Lock and key, December 16.
 - Westhead, Joseph I., Small-ware making, September 24.
 - Whitehead, John, Securing and cleansing, Nov. 5.
 - Whitworth, Joseph, Knitting machine, Nov. 10.
 - Wilde, John,—see Whitworth, Joseph.
 - Witty, Richard, Building materials, Dec. 3.
 - Woodcroft, Bennett, Printing calicoes, &c., Dec. 3.
 - Wright, Theodore L., Feather cleaning, Dec. 31.
 - Wright, W. E., Coal-box, Aug. 12.

FOREIGN PATENTS.—BELGIUM.

LIST OF PATENTS RECENTLY GRANTED BY THE

BELGIAN GOVERNMENT.

(Continued from No. 25.)

Lemielie, Th., residing at Liege, rue St. Thomas, No. 284, a patent of invention * for 15 years, for a floating lever to set in motion or arrest the action of the piston of steam-engines spontaneously, according as the water in the boiler rises above or sinks below a certain level, Dec. 31, 1839.

Barbanson, C. H. C., residing at Brussels, Quai aux Foins, No. 31, a patent of invention and im-

* For the meaning of the terms *importation* and *invention* as applied to patents taken out in Belgium, the reader is referred to No. 5, Vol. 1. of the "INVENTORS' ADVOCATE," page 69, in which will be found our remarks on the defects of the existing law.

provement for 15 years, for a new method in the manufacture of sugar, Dec. 31, 1839.

Bertrand, André, residing at Liege, rue Cours des Minieurs, No. 79, a patent of invention for 15 years, for a new mechanical wagon, applicable in railroad cuttings, Dec. 31, 1839.

Dowling, Thomas, residing at Brussels, Hotel de France, Montagne du Parc, a patent of importation for 10 years, for improvements in the manufacture of gelatine, size, and glue, Dec. 31, 1839.

N. B.—This patent is granted on the following conditions, and will be declared null and void if the patentee do not strictly comply with them.

The patentee is bound to authorise all the manufacturers of the country, who may require it of him, to set up and work the machine in question; and he is to give them, for that purpose, all the necessary information, in consideration of a fair indemnity, to be agreed upon between the parties, or, in case of dispute, to be fixed by arbitration.

Louis-Josse Goens, ropemaker, residing at Termonde, a patent of invention for 15 years, for a new method of making flat cords of metallic wire, Jan. 12th, 1840.

Dugniolle, J. F., physician, residing at Brussels, Petit Sablon, No. 21, a patent of invention for 5 years, for an apparatus for cleansing railways of encumbrances during the progress of the trains, Jan. 12th, 1840.

Taylor, William, residing at Brussels, Boulevard de l'Observatoire, No. 43, (with Monsieur Hanbrechts,) a patent of invention for 15 years, for a new method of ventilating mines, Jan. 12, 1840.

Decressonières, J. F., soap manufacturer, residing at Brussels, Faubourg de Flandre, No. 182, for an improvement in the manufacture of yellow soap, Jan. 12th, 1840.

Antoine Sibille, of Paris, residing with his representative, Monsieur Vandermeulen-Vanhaelen, Brussels, Rue du Lombard, No. 24, a patent for 10 years, for improvements in the new system of steam-engines, applicable to all uses, for which a patent was granted on May 24th, 1839,—Jan. 12, 1840.

Atkins, John Beresford, merchant, residing with M. Dixon, his representative, at the Hotel de Gronendaal, Brussels, a patent of importation for 10 years, for improvements in the machinery for bleaching tissues of flax, cotton, and other materials, January 12th, 1840.

Woolcombe, Thomas, merchant, of London, residing with M. Dixon, his representative, at the Hotel de Gronendaal, Brussels, a patent of importation for 10 years, for improvements in painting walls and other surfaces, Jan. 12, 1840.

Huart, J. C., residing at Brussels, Rue de la Pepinière, No. 19, a patent of importation for 5 years, for a machine for cutting lamp cottons, Jan. 12, 1840.

Diron, Abraham, residing at Brussels, Hotel de Gronendaal, a patent of importation for 10 years, for improvements in the apparatus serving to prevent persons and animals from drowning, Jan. 12, 1840.

Zacharie Raingo, watchmaker, residing at Ixelles, Chausée de ce nom, No. 477, a patent of invention for 10 years, for a new lithographic press, Jan. 12, 1840.

ANNULLED PATENTS.—BELGIUM.

George John Ihler, of London, residing at Brussels, Rue de la Chausée, No. 53, a patent of importation for 10 years, granted Feb. 13, 1837, for improvements in the construction of capstan-levers.

Elie Blondel, residing at Brussels, Rue de la Chausée, No. 53, a patent of importation for 10 years, granted Jan. 12, 1837, for gilding metals without the aid of mercury.

FRANCE.

MEETING OF THE ACADEMY OF SCIENCES, PARIS,
JANUARY 13, & 20.

(Continued from No. 24.)

M. LEREBOURG presented to the academy some beautiful views of the principal buildings at Rome, taken with the apparatus of M. Daguerre by a skilful person whom M. Lerrebours took the earliest opportunity of sending to Rome for that purpose.

M. BUSSY made a communication on the composition of the essential oil of mustard. It was well known that the oil which gives to the mustard its peculiar smell and taste, was formed by the action of water under certain circumstances; but from what particular part of the plant, or in what mode the essential oil was produced, remained unknown. The experiments of M. Bussy tend to prove, that there exist in the powder of the common mustard two elements, which acting upon each other, when combined with water, produce the essential oil; one is an acid, which he calls myrolique; the other is a substance similar to albumen.

M. LASSAIGNE presented to the academy a paper treating of the action of metallic salts upon the albumen and organic parts of the human body. He shews that albumen possesses the property of uniting with a great number of metallic salts without decomposing them, and thus forms salts insoluble in water, &c.; and it seems probable that when metallic salts are administered internally, there may be formed by means of absorption, a similar combination between the salts, the organic parts, and the albumen in the different fluids, and that they thus pass into the system and produce their medicinal effect.

M. DEVILLE communicated a curious result of the action of chlorine upon the essence of turpentine. The latter acts upon polarised light so as to turn the *plan de polarisation* to the left; but if the hydrogen is replaced by the same quantity of chlorine, a new substance is produced, which turns it in an opposite direction. The essence of turpentine therefore, and this new substance of M. Deville, though fumed by the same chemical operation, are composed of different atoms, since their effect upon the element of light is so different.

M. ARAGO read to the academy a paper on the causes of the scintillation of the stars, a subject which he has treated at length in his course of astronomical lectures. This scintillation, he thinks, arises partly from a change in the intensity of the stars' light, and partly from a change in the color of that light. The change in the intensity had been noticed by Galileo; the change in the color was first observed by Repler. The phenomenon is explained by M. Arago on the principle of interference, that is to say, upon the rencounter of the luminous rays which the stars emit, so as sometimes to unite with, and sometimes to neutralise each other: the different portions of the atmosphere through which the stars' rays pass, acting as lenses of different densities, and different refracting powers, which would naturally disturb and change the composition of the light received by the eye of the observer. M. Arago added that, in some parts of the world, Persia, for instance, and several places in Asia Minor, &c., the stars did not scintillate. He also stated that his theory was not affected by the objections drawn from the scintillations of certain planets, such as Mars and Venus; as the apparent anomaly in his system, with regard to them, arose from the vast distance at which they are placed, and their extreme smallness as regards us; and he remarked that the sun might thus be seen to scintillate, by observing it as reflected upon a bowl of tinned glass (*vase étamé*) which reduces its proportions and diminishes it, as it were, to a point.

M. LUGOL presented a treatise upon scrofula, in which he says, that a very long experience and accurate inquiry has led him to the conclusion, that hereditary influence predominates in the propagation of all scrofulous diseases.

RAILWAY INTELLIGENCE,
DOMESTIC AND FOREIGN.

RAILWAYS IN IRELAND.—A numerous and very respectable meeting was recently held in the Commercial Buildings, Dublin, for the purpose of considering the question, whether railways through Ireland should be executed by the government or by private speculation. The chair was taken by FITZSTEPHEN FRENCH, Esq., M.P. Mr. THOMAS BIRMINGHAM, of Coramana, by whom the meeting was convened, explained the objects in view, and stated that the Under Secretary of State had informed him, in the absence of Lord Morpeth, that there would be the greatest difficulty in persuading the people of England to advance money for Irish railways, more particularly as the promoters of such undertakings in Ireland were not numerous. The important question, therefore, to determine was, how the railways in Ireland could be best carried into effect, whether by government or by private speculation. The cost of executing three different lines would be six millions sterling, and he (Mr. B.) was of opinion, that their only chance of having railways at all would be by leaving them to government. He had been severely censured for changing his opinions upon this matter, but he conceived that he was fully justified in doing so, for he was firmly convinced that private enterprise was totally inadequate in Ireland to carry the present object into effect. Mr. Birmingham referred, in support of this opinion, to the enormous costs of law expenses in railway undertakings in England, and observed, that there were many proprietors in Ireland who would willingly give their land to government, but would refuse to give it to parties embarking in a private speculation. He afterwards referred to the Belgian railways, and the low rate of fares charged by them compared with the charges made by railway companies in England. The importance of cheap travelling by railway in Belgium, he observed, was shown by the fact that the first class carriages there yielded a revenue of 5 per cent.; the second 9 per cent.; the third 32 per cent.; and the fourth 54 per cent. On these lines of railway the gradients never exceeded 1 in 150. Mr. B. next adverted to the establishment of railways in Austria, Prussia, and other states on the continent; the fact being, that with the facilities of rivers and railways combined, the people of those countries would be able to send their corn cheaper to the English market than the people of Ireland. When government had been solicited to undertake the making of railways in Ireland, they were told that it would be a dead loss to lend money to Ireland, for it would never be repaid. Now, he could not better explain this fallacy than by saying, that the money they borrowed was regularly refunded, every farthing lent had been honestly and faithfully repaid, or was in course of repayment; therefore, he was justified in denying the charge of want of faith in Ireland. After advertizing to the great relief which the construction of railways would afford to the unemployed population of Ireland, Mr. Birmingham concluded by recommending the meeting to draw up and adopt a resolution confirmatory of the resolutions already adopted at the meeting in London, leaving the direction and extent of the lines to the consideration of government. He also suggested that a deputation should be appointed to wait upon government. Resolutions were ultimately adopted in accordance with these suggestions....Mr. STAUNTON said, that the public mind could not be too much disabused in reference to the allegation, that a loan of money was equivalent to a grant to Ireland; nor should it be supposed that the repayment of advances made to Ireland were only occasional. They occurred every year as regularly as parliament assembled. In proof of this, he would quote the payments for the last six years by Ireland, according to parliamentary returns. In 1833, they were £297,000; in 1834, £317,000; in 1835, £357,000; in 1836, £327,000; in 1837, £349,000; and in 1838,

£377,000. After all the attention it was in his power to give to the subject, the conclusion to which he had come was, that it would not be wise to fetter the government in the exercise of that discretion on a matter in which it appeared they themselves wished to be free....Similar opinions were expressed by other gentlemen; and the resolutions having been unanimously adopted, a vote of thanks was passed to the chairman, and the meeting separated.—*Abridged from the Dublin Monitor.*

BIRKENHEAD AND CHESTER RAILWAY.—We understand that arrangements are in progress, and may be said to be certain to be completed, between the Grand Junction directors and the directors of this company, which will ensure a direct passenger traffic from Birkenhead to London. It will embrace four first class trains every day; two in the morning, and two in the evening. The works are progressing fast to completion. The viaducts at Moston and Bromborough are proceeding most satisfactorily; and the brick work and masonry on the whole line is nearly all completed. It is expected to be opened for passengers and traffic by the end of the month of July.—*Chester Chronicle.*

NORTH MIDLAND RAILWAY.—We understand the Leeds station has been contracted for by Thomas Jackson, Esq., of London. The contractors generally along the line are vigorously pushing on their works, which, to appearance, promise speedy completion.—*Derby Reporter.*

LEEDS AND SELBY RAILWAY COMPANY.—At the half-yearly meeting of the shareholders of this company, held at the company's offices, in Marsh Lane, Benjamin Gott, Esq., in the chair, a dividend of two per cent. for the half year was declared. A new engine, to be called the *Kippur*, was ordered to be started to-day.—*Leeds Intelligencer.*

RAILWAY COMMUNICATION WITH PORTSMOUTH.—On Monday week, a numerous and respectable meeting of the inhabitants of Portsmouth was held in the Sessions Room, to receive a report from the committee appointed some time ago, to take preparatory steps for forming a company and obtaining an act of parliament for establishing a communication with London, by means of a railway through Chichester, Arundel, and Horsham, to the Brighton Line, now considerably advanced towards completion. In the absence of the Mayor, Dr. QUARRIER was called to the chair. Mr. LANG, the secretary of the committee, read the report, which attributed the want of success that had hitherto attended their efforts, to the depressed state of the money market; but now that the improvement in the share market gave such promise of success to the undertaking, they were of opinion that an effort should be made to carry the project into operation. The committee, in concluding their report, impressed upon their fellow-townsmen that the best interests of their borough depended in a great degree upon the success of the present measure. The report having been read, Mr. E. JACKSON entered into a history of the undertaking up to the present time, observing that it had this peculiar excellence about it, that the estimate of profit was founded on the existing trade of the port, without a single item of prospective increase, which had invariably attended the opening of every railway. That statement presented a return of 15 per cent. to the shareholder on an outlay of £600,000. The line was comparatively a dead level for miles, no expensive works were required, nor any thing about which any great error in the estimates could be made, but even should the line cost double the amount stated, a profit of 7½ would then accrue, although no increase of trade should arise. Admiral Sir FRANCIS AUSTIN, K.C.B., moved the first resolution, recognising the importance of the railway to the prosperity of the town of Portsmouth, and expressing the conviction of the meeting that it should be executed with the least possible delay. Mr. STIOANT expressed his conviction that without a railway they should certainly lose what trade they had, and their splendid lines of packets would be removed to another port. There

Were no engineering difficulties to overcome—no hills to cut through—no embankments or tunnels—the work might be done at the cost estimated, and there could be no doubt of a fair return for the capital expended. The resolution was passed unanimously, and votes of thanks having been given to the chairman and committee, the meeting separated. Before breaking up, a number of shares were subscribed for, to which about one hundred more were added next day.—*Abridged from Hampshire Telegraph.*

RAILWAY COMMUNICATIONS WITH SCOTLAND AND IRELAND.—In the House of Commons, a few evenings since, Sir R. PEEL enquired whether any commission of engineers had been appointed to consider and report upon the different contested lines of railroad. If such a commission had been appointed, then he also wished to know what lines had been submitted to their consideration? Mr. LABOUCHERE believed that the matter stood thus: Two addresses had in the last session been presented to the crown, praying for inquiry by the government into certain proposed lines of railway; one of these related to the great line to Edinburgh and Glasgow, and the other to the line towards Ireland. In consequence of the presentation of those addresses, a commission of engineers had been appointed to inquire into the merits of such lines as had at that time been surveyed, and that commission was still prosecuting the inquiry. The government had taken care to guard against the supposition that it was a general commission, as the inquiry was confined to those lines which had been surveyed at the time of its appointment, and which were to communicate with the north and with Ireland. It was not however, proposed to take these lines out of the hands of the private companies which had projected them.

BRUSSELS.—On the 22d of January, the Chamber discussed the article of the budget relative to railways. On the subject of the disparity in the cost of the embankments on the sections from Bruges to Ostend, and from Landen to St. Trond, the minister of public works took occasion to reply to some warm remarks made elsewhere, by disabusing the public mind of the notion that open competition is always conducive to economy, and by showing the advantages the Ostend section had over the St. Trond, owing to water carriage, and other circumstances.

M. Van Houbrouck de Fiennes, at the same time that he lamented the apparently exorbitant variation in the cost, gave government credit for introducing numerous improvements in the system of railroad management, and observed that the excessive expenditure in forming the central section was counterbalanced by the saving effected through mature experience.

M. Debehaye exclaimed against the jobbing about the earthwork from Ghent to Courtrai; but he failed to convict government of omitting any thing which might promote a judicious economy.

The Chamber, in fine, sanctioned the chapter relative to railways.

The minister of public works announced his intention of submitting to the Chambers a project of law to authorise the taking of 4,000 shares in the Cologne railway by government.

HAVANNA.—What with steam-boats and railways, few places can boast of facilities in communication equal to Cuba, both inland and coastwise. The railway company for forming the line from Cardenas to Becuba have nearly completed it, and shares in the company are no longer procurable. The sales in the Havanna and Guines railway shares produce much competition. Two rich companies are offering guarantees for 2,000,000 duros. It is thought that the dividends will be 80 per cent. before the lapse of four years.

BELGIUM.—*Traffic on the Belgian railway during the first fortnight of January, 1840.*—Passengers, 40,507; weight of goods, 1,825,195 kilogrammes, including 55 wagons and 1,745 tons. Total receipts, 93,841 francs 36 centimes; about fourth of which, or 19,371 francs 41 centimes, was for the average of goods and luggage.

PHILOSOPHY OF THE MECHANICAL POWERS.

No. 1.—THE LEVER.

We take it for granted that our readers are acquainted with the action of what are called the Mechanical Powers. The principle on which depends the advantage derived from the employment of those powers is, however, not so generally known, and in some cases it is a "vexed question" among philosophers themselves. We shall, therefore, devote three or four articles to the consideration of this subject, which is one of great interest both in a theoretical and in a practical point of view.

The mechanical powers are usually considered to be six, viz. the lever, the wheel and axle, the pulley, the inclined plane, the screw, and the wedge. The primitive mechanical powers may, however, be reduced to the lever and the inclined plane, of which the others are only modifications. It is a received axiom in mechanical science, that whatever is gained in power by the use of these instruments is lost in time; or, when they are employed in accelerating motion, whatever is gained in time is lost in power. Let us, then, in the first place, consider to what principle this invariable property of the mechanical powers is owing. The lever affords an exemplification of the existence of this property in the simplest form; we shall, therefore, take it as an illustration of the principle, which is applicable however to all the mechanical powers.

When equal weights placed at the two extremities of a scale-beam are moved up and down, they describe equal spaces in the same time, because the two arms of the beam are of equal length. Equal weights moving through equal spaces in the same time possess equal quantities of motion, or momentum; that is, if either weight were to strike against a detached body, the quantity of motion communicated to it would be the same whether it were struck by one weight or by the other. When at rest, the two weights remain in equilibrium, because the attraction of gravitation on each being the same, one could not be drawn from its horizontal position nearer to the ground without raising the other weight through an equal space, in opposition to the force of gravitation. But if the point of suspension be placed nearer to one weight than to the other, the attraction of gravitation would draw down the weight on the longer arm of the beam, because the space through which the weight attached to the shorter end would have to be raised, would not be so great as that through which the other would descend. Suppose, for instance, the longer arm to be three feet and the shorter to be one foot: the weight on the longer arm would descend three feet, and it would raise the weight on the shorter arm one foot.

To restore the equilibrium of the beam, it would be requisite to make the weight on the shorter arm three times heavier than that on the longer one. In that case, the greater weight could not descend one inch without raising the lesser weight three inches, and one pound raised three inches is equal in mechanical force to three pounds raised one inch.

The rule to ascertain the quantity of motion, or momentum, that a moving body possesses is, to multiply the mass of matter moved by its velocity; the product gives the amount of motion which the moving body is capable of

imparting. By this means we ascertain that the momentum of each mass at the opposite ends of an acting lever is the same, however disproportionate their comparative weights may be, and we thus perceive that the mechanical advantage gained by the lever depends on its enabling us to increase the momentum of the same force, by giving it a greater velocity than the resisting weight against which it is brought to act.

On the same principle, the advantages gained by the other mechanical powers may be explained, but the consideration of their respective modes of action will be resumed in subsequent numbers of our publication.

IMPROVEMENTS IN LOCOMOTIVES.

We intimated, in a former number, our intention to give, weekly, illustrative engravings, having reference to improvements in mechanical science. Our arrangements enable us to commence from the present time.

We have selected on this occasion, one of the locomotive engines now in full operation on the Belgian railroads. Mr. A. LIVINGSTONE has kindly furnished us with the original drawings of these engines, which were constructed by him, and the first manufactured in Brussels. Sections of the various machinery will be exhibited in subsequent numbers.

EXPLANATORY REFERENCE.

a A. External fire box.
b B. Cylindrical part of boiler, wherein the tubes are inserted.

c c. Smoke box, where the steam cylinders are fixed.

d D. Steam-dome.
d. Man hole.

e Z. Steam whistle.
e E. Safety-valves.

f e. Regulator handle, to admit the steam into the cylinders.

f. Chimney.
f The chimney wire-cap to prevent the sparks from escaping from the chimney.

g g. The framing, bolted to the brackets H H H, for the support of the boilers and machinery.

g. The buffers.

h i. Axle guides, to receive the axle bushes, K K K.

i l l. The springs to support the boiler, &c.

m M. The driving wheel, without flange.

m m. Small or guide-wheels, having flanges.

n n n. Splashes over the wheels.

o o. Stays to support the crank-axle, and on which the feed-pumps are fixed.

* * These pumps will be fully brought into view in the section and plan of the above engraving, to be given hereafter.

p P. Connecting rods.

q Q. Cylinder covers.

r R R R. Reversing gear.

s S. Brackets for carrying reversing shaft.

t s. Balcony.

u u. Ascending step.

v v. Drag-link for attaching the tender.

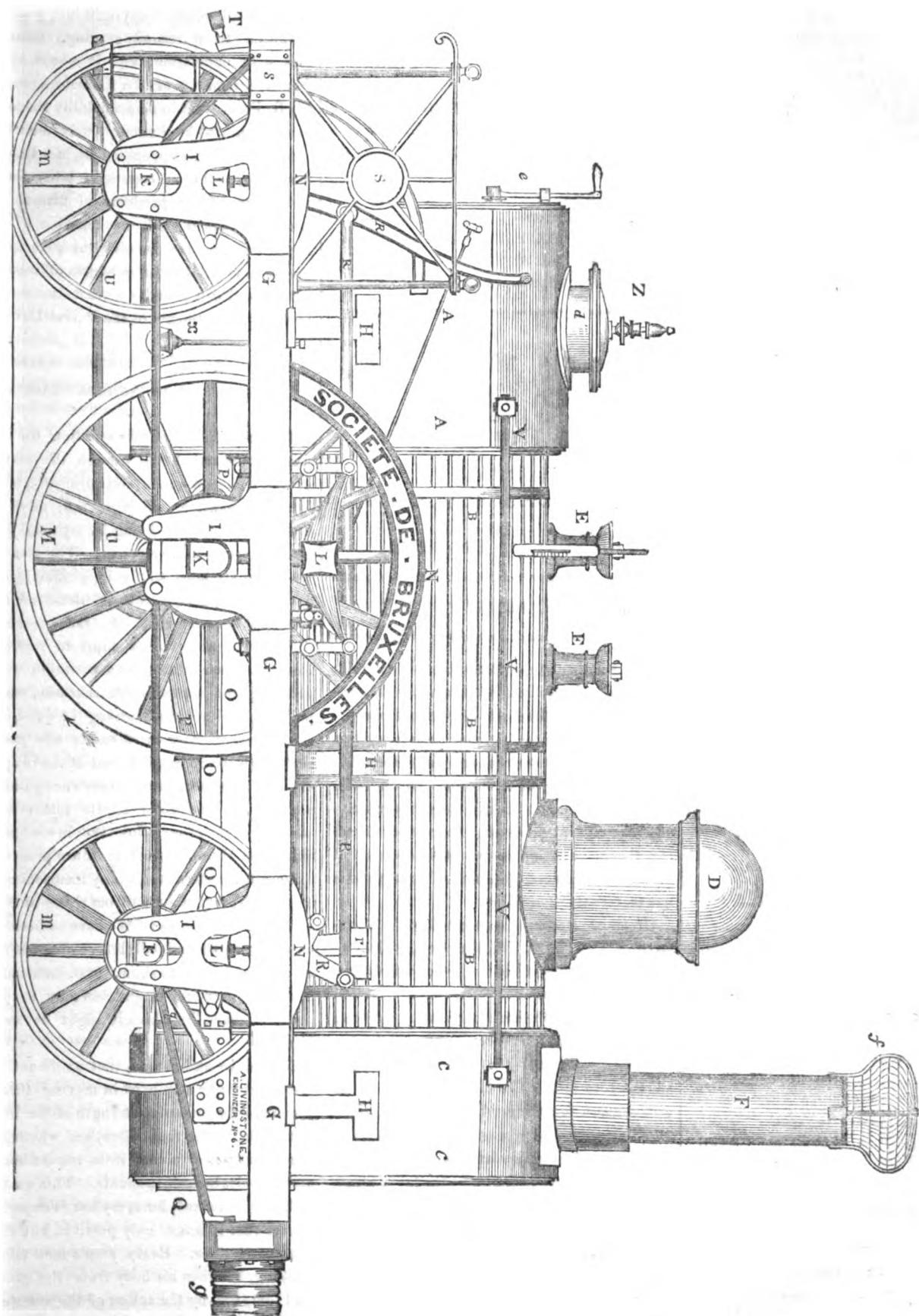
w w. Feed-pump pipes, attached also to the tender.

x x. A safety hand-rail, to enable the director to walk round and inspect the machinery.

y y. Blow-off cock.

ONE OF THE LOCOMOTIVE ENGINES ON THE BELGIAN RAILROAD.

From the Original Drawing by A. LIVINGSTONE, Esq.



GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

Some of the Parties may not, perhaps, have been previously informed of the existence of our Paper, and may not be aware how strongly it advocates, and is devoted to, the interests of Patentees and Inventors.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:-

Antigua	Demerara	Montserrat
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Bermuda	Greece	Quebec
Brasilia	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Helioland	St. Lucia
Caraccas	Honduras	St. Vincent's
Carthagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Columbia	Lagunayra	Trinidad
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Cuxhaven		

It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsmen, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS I to 6, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"Bristolensis."—We apprehend that the representatives of the deceased party would be entitled to his share and interest. We shall be most happy to receive a communication on the subject you have referred to, at your early convenience.

"J. Mellow."—Only by inspecting the Specification.

"T. S. P."—No; you may obtain the patent for England, Wales, and Berwick-upon-Tweed only, if you please.

"J. J. L. G."—The registry of the letter-weight alluded to, gives the proprietor no exclusive right to the substance manufacture. Other persons may make them; if, however, he has registered the particular external pattern to be worked thereon, you cannot make them with such pattern worked into, or on them.

"A Subscriber" asks, "Can you, Mr. Editor, inform me whether any model is to be seen in London of 'Nerve's Suspension Railway'?"—We are not aware that there is any such model in London, but shall feel obliged if any of our readers can give us information on the subject.

"A Shareholder" is informed, that the "Railway Company" he alludes to, are in very ill odor with capitalists; and from what little we ourselves know of their transactions, we advise our correspondent to be very cautious how he embarks more of his money in so hopeless a speculation. He may rest assured that, if he does so, he will never receive any valuable consideration for it in that quarter.

"W. Duddon." Liverpool.—When the article is completed, it will be found to contain all that our correspondent wishes to know. It will embrace every railway that he inquires about.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE
INVENTORS' ADVOCATE,
AND
JOURNAL OF INDUSTRY.

SATURDAY, FEBRUARY 8, 1840.

The number of petitions for private bills, presented to the House of Commons this session, is two hundred and sixteen; the majority of which are for carrying into operation important public works and improvements, including among them, twenty-four bills for railways. The number of these undertakings affords sufficient evidence, that notwithstanding the commercial distress this country at present experiences, the spirit of enterprise is not materially diminished.

Of those measures connected with Manufactures, Commerce, and the Arts, which we have previously noticed as in contemplation, the bill for regulating the navigation by steam, and Mr. Pryme's motion on the Corn Laws, continue in abeyance; the former having been postponed till the 11th, and the latter till the 13th inst. The bill introduced by the government for the establishment of inland Bonding warehouses was read a first time on Wednesday, and will, when passed into a law, be a great accommodation to the large manufacturing towns which it is intended to benefit.

The Copyright bill, it appears, is to be as stoutly opposed in its progress this session as during its former struggles through the House— even the ordinary form of obtaining leave to bring in the bill not having been passed with-

out a division. A better fate seems likely to attend the Designs Copyright bill, which has advanced to a second reading, though it met with opposition, and it would appear, from the remarks of Mr. LABOUCHERE and Sir R. PEGG, that in all probability the term of protection will be limited to six months instead of twelve, as proposed by Mr. Emerson TENNENT. These copyright bills, for the protection of the products of mental labor and of artistic skill, we consider of great importance, as they involve the principle of protection for all the products of inventive genius, and will prove, we trust, the forerunners of improvements in the Patent Laws.

IS ARTIFICIAL FLYING PRACTICABLE?

In the solution of this question the whole world is interested, and though the majority of scientific men would, most probably, answer it in the negative, we must not, merely on that account, rank flying by artificial means among impossible inventions. The many unsuccessful attempts to fly by artificial wings have caused all projects of the kind to be viewed with ridicule, in the same manner as the hitherto abortive attempts to guide balloons have tended to class aerostation among visionary and impracticable schemes; but the philosophical mode of viewing the question is, to consider whether there exists any *positive obstacle* to the accomplishment of the proposed object, and to regard the experience gained by preceding unsuccessful efforts rather as an advantage in prosecuting the investigation, than as an absolute check to future progress.

Does there, then, exist any insurmountable obstacle to prevent a man from rising in the air by mechanical means? We have no hesitation in saying, most decidedly, *there does not*; and we shall endeavor to show, first, that such a project is practicable, and secondly, to point out the means by which it might be accomplished.

It must be understood, that we do not limit the power to be employed in moving through the air to the muscular strength of the limbs; but let us, in the first place, see whether by muscular power alone, it is impossible for man to raise himself in the air. This question is shortly answered, for every hour's experience proves that it is not only possible, but that it is actually done. Every step a man takes in walking, he raises his body from the ground, and that, too, by the action of the muscles of one leg alone. In going up stairs, and in

ascending a hill, he raises his whole weight from the ground to a considerable elevation in the air; and though the exertion, if continued, occasions fatigue, yet a man accustomed to exercise would ascend a mountain 2,000 feet high without resting. Thus we have a proof that the muscular power of the human body is sufficient to overcome its gravitation, and that the power may be sustained for a long interval. Having, therefore, the power, when treading on a solid footing, to raise the weight of the body from the ground, all that is required is to obtain a sufficient hold on the air to serve as a resisting or reacting force. The best mode of obtaining such a resistance is, therefore, the problem to be solved, and when that is accomplished all the difficulties of flying will be surmounted. That the attainment of such a reaching power is within the range of mechanical ingenuity, there can be no doubt.

A very simple apparatus was contrived by the writer of this article, for the purpose of showing the possibility of gaining a reacting force on the air. It consists of a small vane made of pasteboard, somewhat similar to, but much stronger than the paper windmill toys. This vane was fixed firmly to a round wooden axis, about six inches long, through the bottom part of which a hole was drilled. A rapid rotatory motion was communicated to the axis, by means of a string wound round it, in the same manner as in spinning a humming-top. The action of the revolving vanes against the air, caused the apparatus to rise a considerable height, or to move horizontally with great force, according to the direction in which it was held.

We thus perceive one mode, and a very easy one, by which a resisting force may be gained, sufficient to raise a weight in the air by mechanical means. It only requires the attention of ingenious scientific men to be directed to the subject, and other and more efficacious methods of obtaining a "hold" on the air would doubtless be invented.

But, it may be said, even if such a resisting force could be procured, the fatigue of raising and sustaining the weight of the body in the air would be so great, that the invention, for all practical purposes, would be useless.

We have more than one answer to this objection. In the first place, there are means of suspending the body in the air, which would prevent the necessity of the constant exertion of strength that would otherwise be requisite to overcome the force of gravitation. For instance, if we suppose an extended surface,

or sail, (which the aeronaut could have the power of inclining in any direction at pleasure) to form part of the flying apparatus, the resistance of the air under such extended surface, when it was placed horizontally, would assist greatly in suspending the weight of the body. By the use of this expanded surface, the aeronaut would also be able to regulate his course in the air with great facility. When, for instance, he required to rise higher, there would be no necessity to make the effort of raising himself perpendicularly, but, by the inclination of this regulating plane to the air in the direction he was moving, he would, by merely continuing the horizontal motion, be gradually elevated by the reaction of the air on the slanting surface, on the same principle as a kite rises. He would, in such a case, be acting against the air in rising with the mechanical advantage of the Inclined Plane, and the requisite muscular power would consequently be diminished in proportion to the angle of inclination.

There is, however, another, and a more complete answer to the anticipated objection. We guarded ourselves at the outset, against being limited to the muscular strength of the body alone as the motive power in artificial flying, and we imagine, when that mode of travelling is rendered practically available, it will be accomplished by employing the power of steam, or some other active locomotive agent. Even at the present day, steam-engines may be constructed combining the power of several men within the weight of one, and power-engines are as yet in their infancy. Supposing, therefore, that the energies of some engine be employed, and brought to act effectively against the air, the whole difficulty of flying would be overcome, and the objection on the ground of fatigue, would be entirely obviated.

We trust we have now established the position which we undertook to prove, and have shown that artificial flying is at least practicable. The subject well deserves a much longer consideration than our space will enable us to bestow on it. Our chief object has been to rouse the attention of inventive genius to this neglected field of inquiry, and we shall heartily rejoice if the hints here thrown out should afford any assistance in prosecuting this much-to-be-desired object.

Horses consume in England annually, the produce of seven million acres; there are one million horses for labor, and two hundred thousand used for pleasure in England.—*Globe.*

NEW INVENTIONS.

THE SAFETY LAMP.

At a meeting of the GEOLOGICAL and POLYTECHNIC SOCIETY of the WEST RIDING of YORKSHIRE, Mr. CHARLES MORTON placed on the table a variety of safety lamps, and proceeded to make some observations and experiments upon them. He called to the recollection of the members the attendance of Mr. Fletcher, of Bromsgrove, at one of the former meetings, when that gentleman produced and described a safety lamp constructed on an improved principle. Mr. Fletcher had since modified his lamp in accordance with the suggestion thrown out at that meeting, and the lamp which Mr. Morton exhibited had been sent to him by the inventor for trial in coal mines. The novelty of the apparatus consists in a door or damper at the top, which is held up by a string tied fast to the lower part of the lamp. If this string be cut or burnt, the damper drops down and extinguishes the light, in the same way as the shutting of a damper on the top of a furnace chimney, puts out the fire beneath. When, therefore, the lamp is introduced into an inflammable atmosphere, the combustion of the fire-damp inside, burns the thread, and the damper, dropping down, destroys the flame. Mr. Morton thought the damper would give rise to so much trouble that the colliers would not use it. The string is not very readily adjusted, and it passes so near to the wick that a slight inclination of the lamp or waving of the flame burns the string, and the falling of the damper leaves the collier in darkness when he neither expects nor desires such a result; and to get rid of this annoyance, he would prop up the damper and effectually prevent its falling even when it was desirable that it should do so, i. e., when it happened to be in a fiery part of the mine. In other respects, this lamp is much like the one invented by Upton and Roberts. The air for feeding the flame, enters through the holes beneath, and is brought into immediate contact with the wick by means of a brass cup. The sides of the lamp are partly glass and partly brass, fitted together so as to prevent the admission of air. In Upton's lamp, there is a wire gauze cylinder inside the glass, but in Mr. Fletcher's there is none. By this omission, the light produced is much stronger, but the safety is materially lessened; for if the glass of Mr. F.'s lamp were accidentally broken, the naked flame would be exposed to the fire-damp, and an explosion would ensue. Mr. Morton stated that he had submitted this new lamp to a variety of experiments, both in and out of the coal mines, and he considered it deserving the attention of this society. He thought the invention was still capable of considerable improvement, and hoped that Mr. Fletcher (though a gentleman entirely unconnected with mining pursuits) would devote more of his time and talents to the perfection of an apparatus, the ingenuity of which had already entitled him to the thanks of the public. Mr. Morton, remarked that the necessity of attempting to improve the safety lamp would become more generally manifest if it were universally known that Davy's lamp is *not safe* under certain circumstances. When "the Davy" is introduced into an inflammable atmosphere, *at rest*, it may be said to be safe; but if the lamp be in motion, or if

a current of fire-damp be directed upon it, there is great danger of explosion. By means of a gas jet on the lecture table, Mr. Morton caused the flame of "the Davy" to pass from the inside to the outside of the wire gauze cage; and he contended that, under similar circumstances, an explosion must inevitably ensue in a fiery coal mine; and he had no doubt some of the dreadful catastrophes that occurred in the pits were occasioned in this manner. Mr. Morton said that the over zealous admirers of Davy had attributed a quality of infallible safety to an instrument which its illustrious discoverer never ventured to claim for it. On the contrary, this distinguished philosopher, in a treatise which he published more than twenty years ago on the subject of the safety lamp, distinctly points out its *unsafety*, when introduced into an inflammable atmosphere in rapid motion; and he warns his readers against using "the Davy" under such circumstances. Mr. Morton was of opinion, that if the notion which generally prevails about the absolute and certain safety of "the Davy" were dispelled, it would have a tendency to produce greater care and caution among miners. Mr. Morton, in conclusion, directed attention to all apparatus contrived by Mr. W. S. Ward, of Leeds, which he thought might be used for giving light to fiery mines, or in operations with the diving bell. The apparatus consists of a small gas-holder, containing a compressed mixture of coal gas and oxygen. To this is attached one of Hemming's safety tubes and a common jet, at the point of which is placed a ball of quick lime. The kindled flame of gas being directed upon the lime ball, a brilliant light is produced, and as the light is covered with a glass jar, the flame is rendered safe by being completely insulated or cut off from the external atmosphere.

FELL'S PATENT BINDING.

It has long been a desideratum with practical ship builders to secure the beam ends and sides of a vessel together in merchant ship building, and various methods have been adopted for that purpose with varied success; but in all cases separation has resulted, and in quantity dependant upon the perfection of workmanship performed, with the services of the vessel and age when examined. Under such circumstances, this new and improved mode has been produced, generally adopted in this country, and approved of at Lloyd's for a 12 years A. 1 ship.

It consists simply of bolts driven through the ship's side, and iron tubes cast with cheeks, by which, with bolts alternately driven, the whole are affixed to the beams, therewith forming a dovetail, and, by a screw nut at the ends of the bolts driven through the sides of the ship, the ends of the beams are closely drawn thereto and secured.

This now method may be used separately, or conjointly, with ordinary vertical knees, as is shown by the drawing upon cards in circulation, with knees below the beams.

From the known fact to ship builders in using knees even of the most approved form and manner, that separation does result consequent upon the unavoidable distance of the nearest (technically called "Throat") bolts, which secure the beam ends and sides together, the knees, in case of the smallest separation taking place, become levers in starting, or disturbing, these only bolts of security, which give rise to what is technically called "Working."

It will appear evident at the sight of the drawings upon cards issued, that by the new plan of securing the binding bolts in a line with the beam edges, no separation can possibly take place from the

cause of distance from the beam or each other, and all tendency to start the bolts by acting thereon as levers is thereby wholly removed.

Thus, then, it will be readily discovered by the practical ship-builder, that the advantages of the invention are, great simplicity of application for the working shipwright, with strength of materials, and security of holding or binding, not to be found in practice by any plan heretofore adopted for the like purpose.—*Tyne Mercury.*

DODD'S PATENT SAWING APPARATUS.

We have this week been favored with the sight of a model of the ingenious machinery invented by Mr. Isaac Dodd, of Rotherham, for sawing wood in various curved forms, which have not hitherto been accomplished by machinery. A model of the curve intended to be cut, being fixed to a table, moving universally (to use a mechanical phrase), the saws have a direction given to them parallel with the model: and whatever curve may be required, it is cut as exactly and as quickly as a straight line of the same length. The principle of the machine is similar to that of the pentagraph. There are a variety of departments of manufacture in which great saving will be effected by this machinery. We are glad to learn that the scientific inventor has kindly engaged to furnish a variety of models and engravings of machinery, invented or improved by himself, to the exhibition of the Sheffield Mechanics' Institute.—*Sheffield Independent.*

DESCHE'S NEW METAL.

The society for the Encouragement of National Industry, having appointed a committee to inquire into the merits of a new metal presented by M. Desch, the following report was made by the committee at the meeting of the 8th January, 1840.

"The committee, after repeated trials, is of opinion that the metal will be an excellent substitute for silver; and that it may be used with advantage for articles that are now usually plated."

This report was the result of the examination and inquiries made by M. Breaut, an officer of the mint, by M. Darcey, a member of the Academy of Sciences, by M. Chevalier, Professor at the School of Pharmacy, and by M. Goultier de Claubry, a member of the Academy of Medicine.

SNUFFERS SUPERSEDED.

There no longer exists any necessity for snuffing candles. Bend the wick at right angles outside the flame, by any means you think proper, and you will then have the average light which a candle can give. No hollow will be formed, as is the case when the candle is snuffed, and consequently it will not gutter, although burning, in some sort, in the form of an inclined plane. On this plan, candles may be made much larger, 2, or even 1 to the pound, so as to give a most excellent light to a person writing or reading, particularly with a paper shade, which may easily be attached to it by means of three small springs.

IMPROVEMENT IN PADDLE WHEELS.

M. Leon Duparc has announced to the Academy of Sciences, that he has succeeded in simplifying the construction of wheels for steam boats to such an extent, that the paddles can be removed in a moment of time, an operation which hitherto has been attended with considerable difficulty. He has also conceived the plan of having the paddles in two parts, independent one of the other, by which means the diameter of the wheel can be increased or diminished at pleasure. This improvement is valuable, since in proportion as the vessel is more less deeply laden, and draws more or less water, the wheels can be arranged accordingly.

CIRCULAR LAMP TRIMMER.

M. Cascl has invented a new instrument for trimming lamps, equally useful and simple, and applicable to lamps of every sort and size. It is called *coupé-mèche circulaire*, or circular lamp trimmer; it prevents the snuff of the wick from falling

into the inside of the lamp, and it compresses and arranges the wick itself, which it cuts with the greatest accuracy, so that the light is always brilliant, and the lamp is kept clean and neat. This useful article, which lies in a very small compass, is sold by M. Cascl, No. 18, Rue de l'Arbre sec; by Brearay and D'Henneau, No. 30, Rue Vivienne; by Breuzin, No. 13, Rue du Bac; by Naudin, No. 23, Rue Neuve des Petits-Champs; by all lamp-makers, ironmongers, and cutlers, and at the manufactory, No. 152, Faubourg St. Denis.

RAILWAY SYSTEM OF GREAT BRITAIN.

(Continued from our last.)

1827.

THE CANTERBURY AND WHITSTABLE RAILWAY, from north side of city of Canterbury to Whitstable Bay, in county of Kent.—Length, 6½ miles.—Capital, £31,000, with power, subsequently obtained, to add £40,000 more.

THE JOHNSTONE AND ARDROSSAN RAILWAY, from Canal Wharf, at Johnstone, county of Renfrew, to harbour of Ardrossan, Ayrshire.—Length, 22½ miles.—Capital, £95,000.—Chief use, conveyance of coal for export to Ireland, and of imported agricultural produce inwards.

1828.

THE BRISTOL AND GLOUCESTERSHIRE RAILWAY, from Cuckold's Peel, east side of Bristol, to Coalpit Heath, parish of Westerleigh, Gloucestershire.—Length, 9 miles.—Capital, £45,000.—Use, supply of stone and coal to Bristol, &c.

THE BRIDGEND RAILWAY, from river Ogmore, town of Bridgend, Glamorganshire, to Duffryn Llynvi Line, near village of Cefn Gribwyr.—Length, 4½ miles.—Capital, £6,000.

THE SLENELLY RAILWAY, from Slangenck Collieries to Floating Dock, Slenelly Harbour.—Length, 4 miles.—Capital not stated.

THE CLARENCE RAILWAY, from Samphire Beacon, river Tees, county of Durham, to junction with Stockton and Darlington Railway, at Sim Pasture, same county; with six branches, of the aggregate length of 30 miles.—Length of main line, 15½ miles. Capital, £200,000.—Use, conveyance of coal, limestone, &c.

1829.

THE WARRINGTON AND NEWTON RAILWAY, from Warrington to Liverpool and Manchester Railway at Newton.—Length, 4½ miles.—Capital, £53,000.

THE WISHAW AND COLTNESS RAILWAY, from Chapel, parish of Cambusnethan, Lanarkshire, to junction with Monkland and Kirkintilloch Railway, at Old Monkland, same county: with several branches.—Lengths, not given.—Capital, £60,000.

THE NEWCASTLE AND CARLISLE RAILWAY, from Newcastle-upon-Tyne to Carlisle Canal, at Carlisle. Length, 61 miles.—Capital, £300,000. This railway runs direct across the Island, from the North Sea to the Irish Channel, and is chiefly used for the conveyance of goods and passengers. Great doubts were at first entertained of its success; but since its completion, it has fully realised the expectations of its projectors.

1830.

THE LEEDS AND SELBY RAILWAY, from east side of Marsh-lane, Leeds, to banks of river Ouse, at town of Selby.—Length, 20 miles.—Capital, £210,000.—Use, transit of all kinds of goods and passengers.

THE LEICESTER AND SWEMMINGTON RAILWAY, from town of Leicester to north end of village of Swemmington.—Length, 15½ miles.—Capital, £90,000.—Use, conveyance of coal, limestone, &c.

1831.

Though Ireland is not by name included under the title of our subject, yet it is too closely so by all kinds of essential ties and interests, to be with pro-

priety omitted in our enumeration. We therefore notice in its proper place—

THE DUBLIN AND KINGSTOWN RAILWAY, from Harbour at Kingstown, on Bay of Dublin, to Westland Row, city of Dublin.—Length, nearly 7 miles.—Capital, £200,000; but much more has been expended, and raised principally by loan.—Chief use, conveyance of passengers, but embracing transport of all kinds of goods and merchandise also.

THE MANCHESTER, BOLTON, AND BURY RAILWAY, to form a line of connexion between those towns.—Length, 10 miles.—Capital, £620,000.—Use, conveyance of goods and passengers.

1833.

THE LONDON AND GREENWICH RAILWAY, from east side of foot of London Bridge, through Deptford, to terminus at Greenwich; with branch at Deptford, about 750 yards long, to bank of the river.—Length, 4 miles.—Capital, £400,000. This railway, like part of the Dublin and Kingstown one, is carried the whole length at a high elevation over the streets, fields, and scenes of traffic it passes through. It is sustained at this elevation (22 feet) by a series of lofty arches, each of 18 feet span, that have a very fine effect; while on either side, the way is protected above by a parapet 4 feet high. The transport of passengers upon it is very great.

THE GRAND JUNCTION RAILWAY, from Birmingham to junction with the Liverpool and Manchester Railway, near Liverpool.—Length, 97½ miles.—Capital, £1,091,800.—Use, all purposes of general traffic; and pre-eminently conveyance of passengers.

THE LONDON AND BIRMINGHAM RAILWAY, from Euston Grove, New Road, London, to junction with the Grand Junction Railway, at Birmingham.—Length, 112½ miles.—Capital, £2,500,000, according to first estimate; but raised now, in process of completion, to about £5,000,000.

We pass over the two last-mentioned great Railways, as cursorily as we did over the Liverpool and Manchester one; but shall return to them, as well as to it, at a future stage.

THE LONDON AND SOUTHAMPTON RAILWAY, from Nine Elms, on right bank of the Thames, above Vauxhall Bridge, to the beach at Southampton Water.—Length, 77 miles.—Capital, £1,330,000 at first, but subsequently raised to £1,800,000.—Use, general traffic, and conveyance of passengers.

THE NORTH UNION RAILWAY, from Preston, in Lancashire, to junction with Liverpool and Manchester line, about mid distance on the latter.—Length, 22 miles.—Capital, £620,000.

1833.

THE GREAT WESTERN RAILWAY, from Paddington, in London, to Bath and Bristol, with branches to Trowbridge and Bradford, in Wiltshire.—Length, 117½ miles.—Capital, 2,500,000 in shares at first, with authority to borrow £833,333 more; but all this has proved insufficient, and the estimated cost now exceeds £3,000,000.

We shall return to the subject of this great railway, together with the three others already similarly noticed.

THE PRESTON AND WYRE RAILWAY, from Preston, in Lancashire, to harbour at mouth of the river Wyre, 30 miles north of Liverpool.—Length, 19 miles.—Capital, £130,000 in shares, with power to raise £40,000 more on loan.—Use, conveyance of coal, manufactures, &c., and passengers.

THE LONDON AND CROYDON RAILWAY, from Corbett's-lane, Rotherhithe to Croydon.—Length, about 9 miles.—Capital, £283,000. This railway possesses a peculiarity, for part of it runs along the bed of an old canal, which was bought and filled up by the company for that purpose. The course of the canal, however, was too curved and devious to be all available, so that a good deal of new cutting and embanking was necessary.

THE BRANDLING JUNCTION RAILWAY, from Gateshead, in Durham, to South Shields and Monk Wearmouth.—Length, not stated.—Capital, £146,000.—

Use, conveyance of coal, freestone, limestone, goods, and passengers. This railway was first entered upon by two public-spirited individuals, the Messrs. Brandling—whence its name; but was subsequently taken up by, and is now under the management of, a joint stock company.

1836.

THE HULL AND SELBY RAILWAY, from town of Hull to junction with line between Selby and Leeds.—Length, about 31 miles.—Capital, £400,000 in shares, with power to borrow £133,333 additional on mortgage. *Use, conveyance of manufactures, merchandise, and passengers;* and expected, along with other lines running into Manchester, to render that town the great point of transmission of our manufactures to the north of Europe.

THE BRISTOL AND EXETER RAILWAY, from Great Western line, at Temple Mead, Bristol, to the new basin and ship canal on bank of the Exe river, at Exeter.—Length, 75½ miles.—Capital, £1,500,000, with power to raise on loan £500,000 more.—*Use, opening up of intercourse between London and Western Counties, and conveyance of all kinds of agricultural produce, goods, and passengers.*

THE MIDLAND COUNTIES RAILWAY, from London and Birmingham Railway Line, in parish of Rugby, Warwickshire, to a little beyond the confluence of the rivers Trent and Soar; after which, to branch into two lines, the one running north-east to Nottingham, the other west-north-west to Derby.—Length of whole, 75 miles.—Capital, £1,000,000 in shares, with power to raise on loan additional £333,333. This railway traverses several very thickly-peopled manufacturing districts, hitherto much isolated, which it is calculated to bring into more immediate and beneficial conjunction with the three great termini of London, Liverpool, and Manchester.

THE BIRMINGHAM AND DERBY JUNCTION RAILWAY, from two points, one at Hampden-in-Arden, and the other at town of Birmingham, to junction with the Derby and Nottingham and North Midland Railways, at Derby.—Length, 38½ miles.—Capital, £830,000.

THE NORTH MIDLAND, OR LEEDS AND DERBY RAILWAY, from town of Derby to terminus of the Leeds and Selby Railway at Leeds, with two short branches to points of traffic on the line.—Length, 72½ miles.—Capital, £1,500,000 in shares, with power to borrow one third more, if requisite.—*Use, conveyance of coal, goods, and passengers.*

THE SHEFFIELD AND ROTHERHAM RAILWAY, from Sheffield to town of Rotherham.—Length, about 8 miles.—Capital, £130,000.—*Use, chiefly conveyance of coal to town of Sheffield; but embracing also the general transit of goods and passengers.*

THE MANCHESTER AND LEEDS RAILWAY, from near Oldham-road, Manchester, to point between river Aire and Bowman-lane, Leeds.—Length, 60½ miles.—Capital, £1,733,000. This railway connects with the two important towns at its extremities, those of Middleton, Rochdale, Todmorden, Halifax, Dewsbury, Wakefield, Alfreton, and Rothwell; and thus forms a line of first-rate consequence to those great hives of industry.

THE NEWCASTLE AND SHIELDS RAILWAY, from Pilgrim-street, Newcastle, to the New Quay, at North Shields, with branch to Chirton, in parish of Tynemouth.—Length, 7½ miles.—Capital, £120,000.—*Use, chiefly conveyance of passengers.*

Our limits are here reached, though we are only about half through the list for 1836, which, with the following year, 1837, formed the grand era of railway speculation. In our next, we hope to be able to complete the enumeration down to the present time.

(To be Continued.)

FINE ARTS.

BRITISH INSTITUTION.

The 34th annual exhibition of British Artists was opened to the public on Monday, at the gallery in Pall-mall.—Considered as a whole, the collection is not inferior to others which have filled these rooms since this institution was founded, but it must at the same time be confessed that it does not afford evidence of any very successful progress. There are, however, scattered about the walls several works of considerable merit, which could not fail to attract attention even during such a temporary general view as the favor of a preliminary admission affords. There are, as usual, but few essays on subjects which can be called historical, and amongst these Macrile's "Robin Hood" struck us as the most interesting. The incident represented by the painter is the entertainment given to Richard Coeur-de Lion in Sherwood Forest. The King is seated on the right of Robin Hood, who is standing, goblet in hand (and without knowing who his guest is), in the act of drinking the King's health; the king himself joins in the toast. The management of the light in this picture is very judicious, and the coloring harmonious. The story is well told, and taken altogether the picture is very effective.

"Farewell," by the same artist (a small picture), is, compared with that we have just mentioned, a very inferior work. We have a good picture in the historical style by C. Landseer, the subject of which is "The Pillaging of a Jew's house in the reign of Richard I." Inskip has three good pictures, viz.—"A Neapolitan Girl," "A Wayfarer," and "A Flattering Tale." The exhibition contains one small piece by E. Landseer, "Young Roe buck and Rough Hounds," a very fine picture, though we think it does not reach the high merit of some of his earlier productions. Another animal picture is worthy of notice, No. 106, "The Timber-carriage," by J. F. Herring: the horses are well executed. The next pictures which claim attention are the landscapes: of these, however, we have seen a better display in this gallery. We observed in many, a good deal of freshness of effect as well as clearness; but unfortunately too often marred by harshness and want of harmony in the coloring. Some, however, have considerable merit, and those which struck us as among the best are "Morning," by T. Sydney Cooper; and another small picture by the same artist, a view near Matlock, Derbyshire. Three others, perhaps, not strictly coming under the denomination of landscape, are deserving of praise—viz., a scene on the French coast, by Hume Lancaster; a wood scene, with gamekeepers, by Lee; and "Barmouth Sands," by Clint. There are also several good specimens of fruit painting, and we have to instance in particular the "pears and apples" by Oliver, and Nos. 77 and 82, by Lance. We must not omit to mention that, besides the pictures already enumerated, there are two by Turner and Howard, each in their usual style. Among the pictures representing common life, there is one, by Steedman, "brickmakers," a happy distribution of light and shade, and a pleasing warmth of effect.

The patrons of art in Paris have had their astonishment excited, and sympathies awakened, by the performances of the young Franceschi—a boy sculptor of twelve years of age! This extraordinary youth, who had already carried off the first prize in sculpture from his many competitors at the school of Besançon, has recently executed a small statue in marble, representing a sleeping Cupid; so rich in promise of future excellence as to have induced M. de Magnoncourt, member of the Chamber of Deputies, to settle an annuity of 100 francs on him, as an assistance towards the free and full development of his early genius.

The statue to Rubens is to be erected in the Place de Meir, at Antwerp. This spot has been selected by a committee of the Royal Society of Sciences, Letters, and the Arts.

Mr. Cockerill has been named by the Emperor of Russia, a civil engineer, with the title of lieutenant-general annexed. This is in accordance with the regular custom of the country.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL INSTITUTION.

The subject illustrated on the 1st ult., was "the structure and growth of corals." Dr. Grant observed on the importance of the class "mammalia" to man. To quadrupeds he is chiefly indebted for clothing, transport, &c. There are very few from which he does not receive some assistance. Many have been and are to him the source of large revenues, and from them he derives mainly the means of enjoying this life. In proportion as we descend in the scale of animal life, less and less are the various classes related to man, and but few are comparatively interesting. But if, elevating the mind, we consider the smaller and almost invisible myriads as portions of matter, parts of the material universe, and as agents in the great economy of the world, how highly are they exalted! If we survey them, not merely in relation to man, but in all their relations, taking of them not partial but general views, looking on them as parts of the vast whole, how colossal are they in their effects, how stupendous in their operations! In bulk, individually, how insignificant is the zoophyte by the elephant or whale, but, if compared in the mass, the quantities of these beings, which equally live, feed, and have their instincts, the mammalia would be to the polygastric animalcules as a mite to a mountain. The larger masses of our globe, mountain chains of vast vertical depths and horizontal dimensions, are due to organic remains, and these not of the higher but of the lower class—the polygastric tribes. The siliceous rocks, hills upon hills, the mountains of encrinitic and shelly limestones, are all, we are led to believe, these colossal remains and these animal products. Upon examining with the microscope the edges of a polished section of a flint, we have evidence that the round pebbles are due to a race of polyferous animals—the echini. Washed into the sea, and cleansed from the chalk, the pebbles are prepared and are glued together to be again raised in masses of pudding stones, &c. In the limestones also we have perfect indications of animal origin, and in these the material which agglutinates appears to be derived from themselves.

In the present day, there exists evidence of the extensive and wonderful operations of these creatures. The sea swarms with animalcules, and would soon become a solid mass unless they were destroyed. Amongst many sources of reduction in their numbers, zoophytes have been observed to destroy and thus balance each other, a partial destruction for the well-being of the whole. Several kinds Dr. Grant proceeded to describe, and first the simple polypi, as a type of which he instanced the hydra, an inhabitant of the Thames. It is of a plantlike form, and had been for a long time considered a vegetable; but it is a perfect animal of remarkable structure, of a fleshy condition. It has no muscles, no organs of vision, although highly sensitive to light. It draws to its mouth by means of tentacula the substance upon which it feeds, and which it digests. If the animal be turned inside out, the new interior soon exercises the digestive functions. The difficulty to annihilate this simple polypus is great, every section reproducing a perfect animal.

Another polypus mentioned particularly, was the sea anemone, also of simple construction, not forming corals nor any solid matter. The interior surface, however, is different to the outer, and will not, as in the case of the hydra, perform the same function. The whole interior is lined with vibratile cilia, arranged in vertical bands or nervous filaments, and presents an active scene of vibrations. This species is supposed to possess a nervous system. The simple polypi have their part to perform in nature. They destroy putrifying matter. They abundantly inhabit the Thames. The animal portion is contained in the interior of the body, representing granular or fleshy matter. By the cilia, outspreading and constantly agitated eddies in the water are made, and currents to their mouths, bring-

ing the subjects upon which these animals feed. The cilia are exceedingly numerous (about four hundred millions have been calculated by Dr. Grant to belong to one specimen); but of the agent of the muscular system by which these vibratile cilia move we have no conception. The food, however, in consequence of the transparency of the bodies, has been observed digesting in the stomach, and consequently, also, it has been perceived that they are single beings. Further, in the progress of the perfecting of the animal, little vesicles appear, which soon separate from the parent and float about, seeking a place convenient for their development. They are not, in this gelatinous state, dependent only upon the waters for their transport, they are provided with vibratile cilia, by which they may be said to swim about, guided by light, upon which their topographical distribution depends. When these gannules find a favorable situation, they become attached to the rocks, spreading out in a gelatinous mass, from which the granular matter grows. This latter is the flesh of the animal where the cilia spring. Some zoophytes have no cavities in the interior. Their flesh is exposed on the exterior of the solid skeleton as it were, which is an extra-vascular mass, and grows by additions of layer upon layer. Corals in general are instances of this peculiar and wonderful life, but the gorgonia, or black coral, was particularly instanced. To the exterior surface, to the cortex, are confined the gelatinous matter, the granular portions, the organs and cilia, which have independent life, carrying on the functions necessary for the animal's existence and increase. In the black and in the red coral, which present a straited surface or grooves in which the blood-vessels are contained, the blood has been seen to circulate. A large class of zoophytes is composed of these cortaceous beings, and all, indeed all zoophytes, are cilio-brachiate. The endless class of corals, the lithopholites, with their myriads of cilia vibrating, causing the flow of currents directly to their mouths, strain the waters, selecting such matter as is necessary for their nutriment, and depositing the more earthy, the calcareous portions, in enormous masses, to so great an extent, as we need scarcely add, to form the greater source of reefs and shoals, and islands, in the southern seas. The whole economy of these wonderful agents was most ably and enthusiastically treated and illustrated by Dr. Grant.

The subjects announced for last evening, were "The Origin of Alphabetical Characters," and "The Pneumatic Mirror," by Mr. Nasmyth, of Manchester.

LINNEAN SOCIETY.

The ordinary meeting of this society took place on Tuesday evening, Edward Forster, Esq., F.R.S., in the chair. Mr. Anderson exhibited some curious specimens of the vascular tissue of the Agave, or American aloe, which were of a texture exceedingly firm, and fully equal to that of the New Zealand flax. Mr. R. Taylor, the secretary, then read a communication from George Bentham, Esq., describing a new species of the pitcher-plant, discovered by Mr. Schomburgh on the mountain Orariquena, in Guiana. It was growing on marshy ground, at an elevation of six thousand feet above the level of the sea. It differed from the known forms of the same plant only in its having a less number of organs, and in the absence of hairs in the interior of its cup; and the author, therefore, proposed to call it *Helianthoz Nadans*. The next paper read was by Professor Don, and related to the differences of structure existing between the Cycade and the Coniferæ.

In compliance with the wishes of the company and the patrons of the Italian Opera at Paris, it is proposed to rebuild the theatre on the former site. The difficulties thrown in the way of its execution by MM. Calmon and Mignet have been removed, and the Minister of the Interior is favorable to the plan.

SCIENTIFIC MEMORANDA,
AND
NOTES ON ART.

Microscopical Society.—The first meeting of a society whose objects are "to promote improvements in the optical and mechanical construction of microscopes, the reading and discussion of papers upon new and interesting subjects of microscopical inquiry, and the exhibition of subjects," took place a few evenings since in the rooms of the Horticultural Society, Regent-street, Professor Owen, F.R.S., the President, in the chair. The meeting was well attended, and there were present many of the leading members of the Geological Society, the Society of Arts, and several other prominent institutions. Dr. Arthur Farre was appointed secretary; Mr. N. B. Ward, treasurer; and a council was also formed, consisting of Dr. Lindley, Dr. F. Farre, Messrs. Loddie, Quackett, Solly, Gwip, Bowerbank, &c. The president read a paper illustrative of the light thrown upon zoology and geology by the aid of the microscope, particularly as regarding the investigation of the teeth in extinct fossil animals. Microscopic investigation, connected as it is with the minute points of science, lends its aid at the point where all ordinary means fail. The operations of this society must be very extensive, for microscopic investigation was important to the botanist and the chemist as well as the geologist, particularly in examining fossil vegetable structures. Mr. Jackson next read a paper on an improved construction of a microscope, by which in any motion produced, that of the lens, as well as the object, were connected, and a steadiness in the motion was secured. Several microscopes of improved construction were exhibited by the members. The present subscription to the society is one guinea per annum, with one guinea entrance.

Common Road Steam-Conveyance Company.—*Important to Railway Proprietors.*—A few evenings since, the committee and shareholders of the Common Road Steam Conveyance Company entertained a numerous party of capitalists, coach-proprietors, innkeepers, and others, interested in the preservation of the common roads of the country, at the Albion Tavern, Great Russell-street, Covent-garden. It was announced at the meeting, that carriages constructed under the patent of Colonel Maceroni, of which the efficiency had been proved in experiments extending over 18 months, and which the committee of the House of Commons, appointed in the last session, had declared to be complete and satisfactory, would shortly be running, and in a few months the company would have sufficient carriages built to cover the common roads of England. The evidence of the Marquis of Tweeddale, Capt. Fitzgerald (a county magistrate), Mr. Leitch Ritchie, Mr. Charles Hullmandel, Mr. Beale (the engineer), Mr. Mackinnon, M. P., and others, who had travelled in Maceroni's carriages, was quoted at great length, and seemed to satisfy the meeting not only that steam-conveyance upon common roads was practicable, but that the mode adopted by Col. Maceroni was the safest and the best, and the only one that could be brought into general use.

VARIETIES.

Geological Features of the Coal-fields of Belgium.—There are four coal-fields in Belgium—viz., those of Liege and Limbourg, Namur, and Hainault. These may again be classed, the two former under the name of the Basin of the Meuse, and the two latter as the Basin of the Sambre. These basins approach each other at their extremities, within a mile and a half, the intermediate space being occupied by the outcrop of the great carboniferous limestone, which underlays both basins, and by its appearance at the surface serves accurately to mark their extent, except in some few places, where, from its being but little inclined, it is overlaid by more recent

deposits belonging to the oolitic and cretaceous series of strata, which also serve to cover the coal measures within the basins, in some places to the depth of 200 or 300 feet; but this is not altogether so disadvantageous as might at first sight appear, for the coal measures, being highly inclined and formed of schist, grit, and other porous strata, would admit an immense quantity of rain-water into the mines, which is now effectually kept out by the covering of the before-mentioned strata.

The Academy of Inscriptions and Belles Lettres have caused a medal to be struck at the Paris mint in honor of M. de Sacy. M. de Paulis, the engraver of the medallion which commemorates the foundation of the historical museum at Versailles, has executed it with much delicacy. The resemblance to M. de Sacy is exact. On the edge there is the following inscription:—*Ob literas Orientales ingenio scriptisque illustratas, docendo promotas, viro antique virtutis. Nato D. XXI. Septem. MDCCCLVIII. Vt functo, D. XXI. Febr. MDCCXXXVIII. Academia decreto.*

Taste for Works of Art.—It cannot be doubted, that for some time past a more general taste for works of art has been gaining ground in this country; and, consequently, a more general wish to become acquainted with all topics connected with the important and interesting subject. A few years ago, "Exhibitions" were limited to the metropolis; they are now held annually in all the prominent provincial cities and towns of the kingdom. "Institutions for the promotion of the fine arts"—chiefly on the admirable plan of the "Art-Union of London"—are, in nearly every instance, associated with them; and we shall be within the mark when we assert, that by these various societies—in England, Scotland, and Ireland—between 70,000, and 80,000l. have been expended in the purchase of pictures by British artists during the years 1837, 1838, and 1839. Thus, the possession of the best auxiliaries in the cultivation of taste, and with it the intellectual and moral improvement of the country, is no longer confined to a few wealthy individuals. The chance of obtaining a picture in the allotment of prizes is as favorable for the humblest as for the most elevated subscriber. It is an axiom, that the acquirement of one luxury creates a desire for more; and it is, therefore, safe to foretell that the demand for works of art will, at all events, keep pace with the supply. Our correspondents, who direct such institutions as those to which we refer, assure us of the amazing spread which a true taste for, and a due appreciation of excellence in art is making throughout the provinces; without a single exception, the "returns" of the present year have largely exceeded those of the preceding, each showing an increase proportionate to that of the two societies in Edinburgh, which, in 1839, procured and expended a sum four or five times greater than that they were enabled to collect during the first years of their existence.—*Art Union.*

Soot as a Top-dressing for Grass.—We have been struck with the vivid greenness of the pasture land around Newcastle-upon-Tyne, and have been informed that it entirely arises from copious top-dressings of soot which it receives every year. We can believe the statement, for we have observed its excellent effects on grass land in Ireland. It possesses the advantage of being a cheap manure, its cost not exceeding two shillings a quarter, and five quarters are a sufficient dressing for an acre. It may also be successfully used in compost, as the following statement shows, and its effects are thus much more durable than when used alone:—When spread early in the winter on meadow lands, the beneficial effects of soot are frequently observable for three successive seasons, but when mixed with earth and dung, its use is attended with even greater success; a soapy earth is formed which is beneficial to almost all kinds of plants, and its use quickens vegetation. The mixture should be formed of two parts of earth, one of soot, and one of dung. A layer of earth should be covered with soot, over which a layer of dung should be placed, and thus alternate layers must be arranged in a bed about

three or four feet high, and three wide. Soot mixed with the earth dug from ditches, in the proportion of 1-4th, may, in about six months afterwards, be used with successs in dressing meadows. Of this latter mixture, about 30 bushels should be used to the acre. Spread on wet soils, it will destroy the moss, and neutralise the bad qualities of the soil. Cattle are observed to prefer the grass grown on lands dressed with soot, which owes its valuable properties to the quantity of carbonate of ammonia which it contains, and which is a most active stimulant. On this subject we would remark that soot, like many other articles, is even subject to sophistication by the unprincipled vendor, who mixing it with charred saw-dust, and many other carbonaceous substances, the refuse of many chemical operations, renders it comparatively inert and valueless. —*Quarterly Journal of Agriculture*, December.

CURIOUS FACTS IN NATURAL HISTORY.—I am assured that when a sheep has two lambs at a time, she will not permit one to suck her unless the other is present. But for this instinctive arrangement, one of her offspring would have an undue proportion of nourishment, and the other would starve or degenerate. It is well known that a pigeon usually lays but two eggs. If, however, a third is laid, which is sometimes the case, it has never, I believe, been known to come to maturity. If three young pigeons were to be fed, none of them would probably be vigorous, and the race would degenerate. This is another instance of the interests which nature takes in the well-being of her creatures. The cow affords a similar instance: if she has twins, one of them a male and the other a female, the latter is always barren. If a doe produces a white fawn, with red eyes, its under jaw is always defective, and it dies of starvation; a wise provision of nature, in preventing what would probably be feeble from arriving at maturity. When we consider, also, the way in which the CREATOR has provided for the clothing of animals, according to the climates of the places in which they are found, we shall have no less cause to admire his goodness. In hot countries, many animals have but little hair on their bodies, and some are almost entirely without it, such as elephants, monkeys, &c. In very cold countries, the fur as well as the hair of animals is very thick, and even the feet of some birds are covered with feathers, not only to protect them, but to enable them more readily to run upon the snow. Animals, also, which have been brought from one country, and domesticated in a different and opposite climate, are not neglected by nature, but are provided with such a change of covering as is best suited to it. How different is the covering of a Shetland pony to that of an Arabian or Persian horse! One has to endure the extreme of cold, and the other of heat, and we see how kindly nature has provided for both. Ducks which lay early in the year strip more of their feathers off, and make their nests much warmer than those which lay later in the season. This instinctive property is very curious, and shows the foresight which has been implanted in animals. It is well known that in hot countries, where the blood is heated by the climate, they are in the constant habit of bleeding each other, and sometimes of bleeding themselves. This is done by biting the neck or the shoulder. These, and a great variety of interesting facts in the economy of nature, prove that animals are in possession of faculties beyond mere instinct, and which they use to their own advantage under peculiar circumstances. Thus, a friend of mine saw a fine greyhound, which had been incessantly teased by a small spaniel, take it up in its mouth, and drop it over the parapet of a terrace into a river which flowed below it. The noble animal was unwilling to hurt his tormentor, and, therefore, took this opportunity of freeing itself from its annoyance. The dog, in this instance, did what instinct alone would not have taught him to do, and afforded another proof of the truth of the remark I have made above. I will give another instance of this:—A horse and a cat were great friends, and the latter generally slept in the manger. When the horse was going to have his oats, he always took up the cat gently by the skin of the

neck, and dropped her into the next stall, that she might not be in the way when he was feeding. At other times, he seemed pleased to have her near him. —*Jesse's Gleanings in Natural History.*

The Rationale of Gardening.—The luxury of the present age has, perhaps, made no greater progress than in the cultivation of flowers; and in nothing perhaps has it produced its usual effect of depriving men of the sweet zest of simplicity more than in our enjoyment of those sweetest of the earth's children. Heaven forbid that we should lose any of the many bright and beautiful blossoms which have been added so abundantly to our stock within the last few years! Having possessed them, we cannot lose them without pain; and, perhaps, in the very variety, we receive a compensation for the something that is lost. But yet there can be no doubt, in the present day, we do not feel the same keen pleasure and enjoyment in our gardens, thronging with ten thousand flowers, which men did in those old days, when few but the native plants of the soil had yet received cultivation. At the time we are now speaking of, the attention of men in general was strongly turned in France to the cultivation of their gardens; and Du Bellay, bishop of Mans, was about that period importing from foreign countries multitudes of those plants which are in general supposed to be indigenous to the country. One of the first efforts in the art of gardening had been to multiply those shrubs which, though not, as generally supposed, indeciduous, retain their leaves and their coloring through the colder parts of the year, and cover the frozen limbs of winter with the green garniture of spring. Amongst the next efforts that took place, were those directed to the production of flowers and fruits at seasons of the year when they are denied to us by the common course of nature; and any little miracles of this sort, which from day to day were achieved, gave a greater degree of pleasure than we can probably conceive at this time, when such things are of daily occurrence.—*James's Henry of Guise.*

FRANCE.—Models of Machinery.—At the last meeting of the Society of Industry at Mulhouse, M. Choffel, in the name of the Committee on Mechanism, presented a report upon the elementary models of M. Saladin, the first series of which has been presented to the society by the inventor. They are recommended by the committee, as likely to prove highly useful in giving lessons on mechanics, and in the construction of machinery; and as worthy of adoption in all schools of industry, normal schools, and schools of design, in which the pupils should be taught, not only to make drawings of machinery, but to understand its action and arrangement. M. Choffel has offered to give a gratuitous course of lectures on mechanics, under the patronage of the society; and these lectures will be very valuable to the numerous foremen, and other intellectual workmen in the manufactories of Mulhouse. The recommendation of the committee, relative to the models, has been adopted by the society.

A sale is announced to take place at Paris, of number of ancient and modern works, and illuminated and other rare and illuminated MSS. The collection belongs to the Comte de Saint M.—. The sale is to take place on the 10th of February.

PUBLIC EXHIBITIONS.

MR. CATLIN'S INDIAN GALLERY.

A very curious exhibition has just been opened to the public in the Egyptian-hall, Piccadilly. It consists of several hundreds of portraits, landscapes, views of combats, religious ceremonies, costumes, and many other things illustrative of the manners and customs, and modes of living and of battle, &c., of the different tribes of North American Indians. Some of these pictures are exceedingly interesting, and form a vast field for the researches of the antiquary, the naturalist, and the philosopher. The numerous portraits are full of character; they exhibit an almost endless variety of feature, though all bearing a general resemblance to each other. The views of combats are very full of spirit, and exhibit modes

of warfare and destruction horribly illustrative of savage life. The method of attacking buffaloes and other monsters of the plains and forests are all interesting; the puny process of a fox chase sinks into insignificance when compared with the tremendous excitement occasioned by the grappling of a bear or the butting of a bison. These scenes are all accurately depicted, not in the finished style of modern art, but with a vigor and fidelity of outline which arises from the painter having actually beheld what he transmits to canvas. The most curious portion of this exhibition is, however, the representations of the horrible religious ceremonies of several of the Indian tribes, and the probationary trials of those who aspire to be the leaders amongst them. These representations disclose the most abhorrent and execrable cruelties. They show to what atrocious human nature can arrive where the presence of religious knowledge is not interposed to prevent its career. The exhibition also contains tents, weapons, dresses, &c., of the various tribes visited by Mr. Catlin. These are curious, but of secondary importance. The catalogue, which is to be had at the exhibition room, is a very interesting brochure, and will afford the visitors a great deal of novel but important information.

TALMA,
HIS DRAMATIC CAREER.
(Concluded from our last.)

Talma was very fond of the society of Alibert, first physician to Louis XVIII. and Charles X. Alibert invited him one day to his house to meet M. de Boulogne, famous for his eloquence in the pulpit. They were seated at table near one another, the prelate never for one moment guessing who was his neighbor; he had frequently at the palace expressed his regret at being acquainted with Talma only by the enthusiasm of the public. Of course the attractions of the theatre were closed to him, and his appearance with an actor in the "salon," would have savored too much of the curiosity of the world. Alibert was anxious to bring about an interesting introduction, without its formality. When the dinner was over, the bishop approached the doctor: "You have placed me by a delightful companion at the table; who is he?" "An Englishman, a man of some consequence in the House of Commons," was the reply. "With what remarkable purity he speaks our language for a foreigner! I might, however, have guessed he was an Englishman, for his conversation is enlivened by quotations from Shakespeare, Milton, and Pope." "You remind me of his talent for reciting," said Alibert, who, going up to the pretended Englishman, begged him to favor the company with some recitation from Shakespeare; the rest of the guests, who were in the secret, of course joined in the solicitation. "No, gentlemen," replied Talma; "No Shakespeare here, I assure you. I have experienced a reception too cordial not to feel myself justified in borrowing a few verses of one of your great poets; I will try some lines of Corneille; any Englishman with any pretension to literature is familiar with your *chefs d'œuvres*." Talma then took his place in the centre of the salon, the company encircled him at a respectful distance, and a universal silence prevailed. With an exquisite perception of what passage would most accord with the tastes of those about him, he selected, with admirable judgment, the defence of the Christians, by Sévère, in Corneille's splendid *Tragédie Martyr de Polyxène*. Scarcely had the first few lines escaped his lips, than the bishop exclaimed "Vous êtes Talma!"

It would scarcely be credited, that in the prime of life Talma showed an anxiety to appropriate some characters which should suit him in his decline. He played *Auguste*, in *Cinna*. In this play Talma tried an experiment. It is a matter of history that the crafty Octavius affected simplicity; but the Paris public could scarcely understand a Roman Emperor without gold or embroidery,—for

Talma dressed the part in that style; the critics even complained. Talma yielded in some degree; he assumed the purple robe, but no gold, no embroidery; he had the courage to try simplicity of costume. After this attempt he made his appearance in *Joad*. As the successor of Aaron, with the tiara on his head, trod the boards, the profane stage became a holy spot; the theatre was changed into the tabernacle, and the line

"Pécheurs, disparaissez! le Seigneur se réveille."

was delivered with the voice of a prophet, and with a gesture so full of terror, a look so full of anger, that the crowd of sinners seemed to flee away into the dark abyss. Kean is said to have been present at this representation; when some one, who, wishing to praise Talma, and at the same time to flatter the English actor, remarked: "This is Garrick;" to which Kean replied, "Garrick, sir; 'tis Isaiah!" Talma was so inspired with this character, that one morning his brother-in-law, Ducis, expressing his regret at finding him melancholy, and with depressed spirits, he replied, "When I am going to play *Joad*, I feel as the priest who was wont to retire to the holy of holies before appearing at the altar."

Among his last efforts, Talma impersonated the unfortunate monarch Charles VI., deserted in his old palace of Tournelles,—his sorrows, his only kingdom—his grey hairs, his only crown—begging bread to sustain life. The force of art could go no further, and the life of the actor was drawing to a close. Lekain died after having attained his greatest eminence in the character of Vendôme; Talma, in Charles VI.; uniting in their last blaze, as the age of each declined, all the fire of their fame.

The head of Talma presented the Greek model in all the purity of a medallion of the age of Pericles. His physiognomy reflected every expression; naturally of a melancholy cast, he became absolutely terrible as the tragedian beheld, in *Oreste*, the Eumenides with their hissing hair; or in *Hamlet*, the ghost of the murdered Dane. The motion of a splendid arm, too, served with infinite grace, to give harmony to the general conception.

His voice, most sweet instrument! penetrated the heart of the spectator; the effect was electric! In the representation of Rhadamiste, dying under the blood-stained drapery, his voice would change, and gradually grow thin, and so weak, that although it seemed but a half extinguished breath instead of language, it could still be distinctly heard in its minutest inflections. His study of costume was of the highest order; he was either a Greek or a Roman in reality. With his laurel crown, and gold-bespangled robe, who but a hero trod the stage!

They who have endeavored critically to discover the secret of this great actor's talent, have imagined that it consisted in the perfect harmony to be found between his delivery and his action; not only his lips, but if the expression may be allowed, his whole figure seemed to speak. Sometimes the creature genius of poesy seemed to inspire him. Without a line—a word spoken—his audience could catch with singular aptitude hidden meanings and concords. The thought travelled from mind to mind without the intervention of words. He loved with a sort of passion the great parts which contributed to his fame; for the character of a lover made him jealous—Orestes, for instance, which he never played without complaining that the part of Hermione was infinitely finer, and at the same time regretting that his own part had been the more favored object of the poet's study. "Racine m'a laissé trop à faire."—"Racine has left me too much to do," was his expression. Generally speaking, in all his high line of characters, he raised himself to a position from which he never descended; each representation exhibited some new beauty which the occasion inspired. In many others, he was not so uniformly excellent, occasionally some parts would be given but weakly; when, all at once, as awaking from this slumber—from this night—he would fling out dazzling lightning, so that his previous apathy seemed designed for effect. Perhaps, the

poet might not have been equal, how then could the actor be so?

The above may not have afforded a clear idea of Talma to those who have not had an opportunity of having seen him. Mlle. de Staél, doubtless, will be more successful. "You," writes that lady in a letter to Talma, "you are, in the career you have chosen, single, alone in the world! no one before you has ever attained that point of perfection, where art is associated with inspiration, deep reflection with the involuntary sallies of mind, and uncurbed genius with the soundest sense."

THE THEATRES.

"See that the players be well used."—*Hamlet*.

"Nothing extenuate, nor set down aught in malice."—*Othello*.

COVENT GARDEN.—The recent popular revivals have attracted full houses during the week, and every thing is going on as prosperously as the management could desire. Last evening, Mr. Leigh Hunt's new play, a *Legend of Florence*, was produced. On this we shall comment next week.

DRURY LANE.—Mr. MACREADY in *Mary Stuart* and *Macbeth*, is the load-stone of attraction here, and these two plays are announced for performance four evenings every week. We have, therefore, no novelty to discourse about. We observe with pleasure that BARNETT's beautiful opera of the *Mountain Sylph* is in preparation, and to be brought forward next week.

ADELPHI.—A new nautical drama, entitled *Poor Jack*, was produced here on Monday, with complete success. To give the plot would be an outrageous attempt on our part, and would only injure the interests of the concoctor, whose "fun" is so completely *sui generis* that we cannot pretend to analyse it. Of the acting, some idea may be gathered from the principal supporters,—viz. YATES, T. P. COOKE, Paul BEDFORD, SAVILLE, and others; Mrs. KEELLY, Miss Caroline DARLING, and Mrs. NAILOR. The piece was given out for repetition amidst deafening applause, "after which," all who could do so, escaped through the most crowded house of the season to inhale a little pure air.

OLYMPIC.—This pretty theatre, as we have mentioned elsewhere, opens to-night. It will be conducted *à la Vestris*, and will, we hope, prove a profitable speculation to MR. BUTLER, the worthy lessee.

Dr. Spohr has announced to Professor Taylor, his intention of composing an Oratorio for the Norwich Festival of 1842. The subject chosen by the illustrious composer is one which affords ample scope for every variety of musical expression and orchestral description, viz., "The Fall of Babylon." The words have, or, to speak more technically, the *tiributo* has, been selected by Professor Taylor, from a poem written by the Rev. H. Hutton, of Birmingham.

The Olympic Theatre has been taken for a term of five years by Mr. Butler, the tragedian, to whose sterling abilities we have ever borne willing testimony. His present engagements include Mrs. Glover, Miss P. Horton, Mr. Baker, Mr. Forrester, and many other popular favorites. The opening is fixed for to-night, when three new pieces will be produced.

The report that M. Meyerbeer has written a cantata to be executed on the occasion of the marriage of the Queen of England, is altogether erroneous. We have authority for asserting that this eminent composer has been exclusively engaged in finishing his new grand opera.—*Gaúignani*.

It is stated that Mr. JAMES WALLACK will be in London by the middle or end of March, and we understand that Miss MITFORD's beautiful historical play of *Otto of Wittelsbach* is only waiting his return.—*Weekly Paper*.

M. Casimir Delavigne has transferred his tra-

gedy of *La Fille du Cid* from the *Français* to the *Renaissance*, where the character written for and refused by Mlle. Rachel, will be personated by a young débütante, sister to M. Guyon, of the same theatre.—*Galignani*.

Tamburini does not sing at the Italian Opera in London the ensuing season, his place being supplied by a cheaper commodity from Italy, incomparably inferior. If the London public, patronising the Opera largely as they do, are content with a worse company than Paris, they merit the contempt thus shown to them. If we know "John Bull," however, he will not suffer the matter to pass so easily.—*Ibid.*

ADVERTISEMENTS.

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WHAT I am now going to communicate, will do more good in one single day, than Lord Brougham and Vaux's books will ever do till the last moment that a sheet of them shall be kept out of the hands of the trunk-maker, or preserved by accident from still less honorable uses. To a very considerable number of grown-up men the complaint which is called *RUPTURE* is but too well known, and the frequency of the exhibition of trusses in the shop windows, proves to us, not only the extent of the prevalence of the complaint, but also the importance attached to its cure. The complaint is purely mechanical; it consists of a dislocation or displacing a part of the human frame; and purely mechanical is the remedy. The remedy, and the sole remedy, consists of a truss, as it is called, to keep constantly in its place the part displaced. There are a great variety of trusses, some better than others, that is more effectual and less inconvenient: and to a great number of persons it is of great importance to know which sort is the best; and I being in a situation to communicate that knowledge to my readers, know it to be my bounden duty to do it.

Twenty-two years ago I, being out a shooting, jumped from a bank full ten feet high, into the field below, and thereby produced by the shock, something that gave me very great pain, but of the nature of which I knew nothing. I came to London and applied to the late Mr. Chevalier, the surgeon, who directed me to get a truss, which I did. And here I gladly stop to acknowledge the only good I, and I believe any other human creature, ever received at the hands of old Daddy Burdett. Having told him what had brought me to town, "well," said he, "when you have put a truss on, never leave it off on the belief that you no longer want it." A precept which he made effectual by relating to me the cause of the sudden and premature death of Francis, Duke of Bedford, who, thinking his rupture gone for ever, threw aside his truss, but in playing at fives, a sudden twist of his body brought on the complaint again, and sending for a surgeon to London, instead of calling in him of the village, a mortification took place, and he slept with his fathers in a few hours. Many times, and especially in hot weather, I have by this advice, and especially by the illustration of Daddy Burdett, been prevented from risking the fate of the Duke of Bedford.

My complaint has been of very little consequence to me, except at particular times. I have ridden on horseback, and done everything that I should have done if nothing at all had ailed me. But coughing is very untoward in such a case; and I have at times, especially in November and April, constitutional and hereditary cough, which I have had in every year, that I can remember, of my life, and which is always more violent and of longer duration in London than any where else. It is not a cough of the lungs, but merely of the throat; but it causes a violent shaking of the whole body, and at these times I have always until May last experienced considerable inconvenience, and occasionally a great deal of pain. I have found it painful (and it is a nasty gnawing, villainous pain) to stand for an hour or two at a time; and this sometimes annoyed me exceedingly during my lecturing expeditions. When I expected the Whig trial to come on in May last (Oh! the manifold blessings of that trial!) the only thing that gave me uneasiness, was the fear that I should not be able to stand for three or four hours, to last on well upon Denman and his masters, I having at that time one of my periodical coughs. In order to get rid of this fear, which harassed me continually, I resolved to go to Bolt Court, and never to quit it again till I had found out some one to furnish me with a truss which should be efficient for its purpose, even in these seasons of coughing. As I was going, I amused myself in reading Mr. Carpenter's Political Letter: in this paper I read the advertisement of Mr. Coles, Truss-maker, Charing Cross; and as I had tried seven or eight before, I at once sent for Mr. Coles, and the result has been that my complaint is as completely removed as if I had never known anything of the kind; and could I have forgotten the precept of the venerable Daddy Burdett, and more especially the fate of the Duke of Bedford, I should have thrown away the truss months ago. Oh! how rejoiced was I when I felt that I should be able to stand at my ease for the hours that I destined for the belaboring of the Whigs. I

could not (if I had had a cough) without the aid of Mr. Coles, have given them the four hours and a half, which were worth more to them (if they turn them to good account) than all the rest of their lives. I should have mentioned this matter before, but my April cough was nearly gone before Mr. Coles had done the truss, and I was not visited with another till late in September; and I wanted a fair trial before I spoke of this matter. I have now had the trial, and it would be a very shameful neglect of my duty towards my neighbor, for me not to tell the public that I find the remedy perfect; and that I can now scarcely perceive, whether with or without my cough, the smallest signs of my ever having had such a complaint. But am I not here, in doing bare justice to Mr. Coles, doing him an injury, by driving from his shop the tax and tithe-eaters, who will have a "prejudice" that is a villainy against him for the good he has done to me! No hang it; they like their worthless lives too well for that. However, my sensible readers, pay you (if you should need it) attention to what I have said; and let the tithe and tax-eaters creep along through life, with all the twitches and aches of this harassing complaint, and under all the pains and penalties inflicted on them by the awkward, heavy, cumbersome, and still inefficient things, which bungling mechanics put round their bodies. One thing bear in mind: and that is, that this is a matter with which surgeons and physicians have nothing more to do, any more than they have with the providing us with suitable shoes or coats.

As Mr. Chevalier told me, the complaint is purely mechanical; and the application of the remedy must depend on the mechanic solely, just as much as the fitting of a coat must depend on the tailor. Here, however, more cleverness is required: the mechanic must be able to judge well as to the degree of force required; and he must have great ability in causing the pressure to bear in a proper manner. The moment I heard Mr. Coles speak upon the subject, I was sure he was the man: his observations showed a knowledge of his business; and the result has amply verified my opinion. I never saw Mr. Coles before, and I have never seen him since, except to call and thank him. What I have here said of him is but justice, which I do with very great pleasure, while as to the rest, I am only discharging a duty to the public in general, and to my readers in particular. I add this piece of advice to people in London, not to write for a truss any sooner than for a coat or a pair of breeches; not to plague a surgeon to order one; but to go to the mechanic in person, and let him fit the force and form to the necessity of the case.—*Cobbett's Register*, June 23, 1832.

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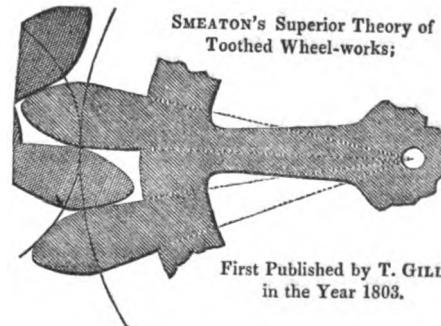
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A WEEKLY BRITISH AND

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ON THE PATENT LAWS OF ENGLAND.

(Continued from our last.)

MONEY PAID FOR LICENCES UNDER AN INVALID PATENT.

As patent rights are now very frequently subjects for commercial speculation, it becomes peculiarly important to know how far such investments may be considered safe, under the circumstances indicated by our title; and for that purpose we propose in the present article to notice the relative rights of persons who pay money for licences to exercise an invention under letters patent which are subsequently annulled, and of the patentee, who thus receives value for consideration which fails.

In the absence of express agreement to the contrary, money paid to a patentee of an invention, of which he supposed himself the inventor, for the liberty of using such invention, and from the use of which a benefit has been received, cannot be recovered back, though it turn out that the patent is void. We will, however, render this proposition more intelligible, by reference to a particular example. On the 12th of September, 1791, one Richard Hare took out a patent for the invention of an apparatus for preserving the essential oil of hops in brewing. By articles of agreement, dated 5th November, 1792, and made between Hare of the one part, and J. V. Taylor, and his late partner, F. Hartford, deceased, of the other part, after reciting Hare's patent, and that it gave him the sole power, privilege, and authority of using, exercising, and vending his said invention, for the term of 14 years, Hare granted to Taylor and his late partner the privilege of making, using, and exercising the invention, for the residue of the term; and, in consideration thereof, Taylor and his partner covenanted that they would secure to be paid to Hare, during such term, an annuity of £100, and would give their bond for that purpose, which was accordingly executed, conditioned for the payment of that annuity. Taylor and his partner used the apparatus (for the making and preparing of which they paid a distinct price) from the date of the agreement until the 25th of March, 1797, and during all that time regularly paid the annuity to Hare. It afterwards appeared that Hare was not the first inventor of the "manufacture" for which he had obtained the letters patent, and that the invention was not new as to the public use and service thereof in England, but was in fact the invention of one T. S. Wood, and had been publicly used by him and others previous to the date of Hare's patent:—the patent, however, had never been repealed. Taylor having paid to the amount of £425 to Hare on account of the annuity, on dis-

covery of the above facts, brought an action against Hare to recover back the money so paid, and on the trial a verdict was found for Taylor for the £425, subject to the opinion of the Court upon a case which set forth the circumstances above narrated. The Court in *Banco* ultimately decided that Taylor was not entitled to recover, for he had had the enjoyment of what he stipulated for, and, for anything that appeared, might have made very considerable profit from it; and, as Justice Heath remarked, "there never has been a case in which a plaintiff, having received benefit from a thing which has afterwards been recovered from him, has been allowed to maintain an action at law for the consideration originally paid." It might as well be contended that, if a man lease land, and the lessee pay rent, and he afterwards be evicted, that he shall recover back the rent, though he has taken the fruits and profits of the land from the date of the demise to the time of the ejection.

It should be particularly noted, that the above case appears to have been decided upon the presumption that the facts constituted a *bond fide* transaction, and that there had been no fraud on the part of the patentee: but we apprehend, that if a transaction of that nature were fraudulent in its incipiency, such an action could be sustained; for instance, if a patentee should receive money for licence to use an invention, after he has discovered that his patent right thereto is invalid; or, if the person paying the money should ascertain that fact before he has derived any benefit from the contract. If questions of this kind were cautiously provided for by the terms of the agreement, between the grantor and grantee of the licence, the expense and anxiety attendant on litigation would be prevented. We invariably recommend stipulations in the agreement, anticipative of similar results, and provide for such contingencies accordingly.

In the case to which we have referred, both parties were equally innocent, each believing the patent right to be valuable; the patentee had paid his money to procure the letters patent; and Taylor for permission to use it: both, therefore, were sufferers from circumstances of which they were, when the agreement was entered into, perfectly ignorant; but we can readily imagine the possibility, nay, the probability, of money being fraudulently obtained for licences to use an invention after the knowledge of the nullity of the patent has been brought home to the patentee, or the persons really interested in the patent, and therefore apprise such parties that money extorted *ex turpi contractu*, cannot be retained. A person purchases a licence upon the understanding that the right to use the invention is absolutely restricted to the patentee and his appointees; and if the patent be void, he does

not enjoy that for which he contracted; for any person may, under such circumstances, exercise the same invention without the permission of the nominal patentee; such a patentee having no exclusive property in the "manufacture," in point of law, cannot confer any; but as we shall more fully expatiate on the different bearings of the subject in a subsequent article on the system of licences under letters patent, we suspend further explanatory remarks.

(To be Continued.)

COMMERCE—ITS ORIGIN AND PROGRESS.

The origin of commerce dates from the origin of society. Amongst the barbarous nations of Europe, Asia, and Africa, of which history has preserved notices, as well as amongst the savage tribes of America, and wherever man was found living in a social state, we may discover also, more or less, extensive commercial habits, in proportion as the position of the country, and the condition of the inhabitants, would favor or oppose them. For this reason we need not find fault with writers who seek for the beginnings of commerce in times anterior to the deluge. We ourselves believe, that, if Noah had constructed the immense ark, of which the scriptures speak, the art of building vessels, and navigation, must have previously made vast progress; and as navigation is the best medium of commerce, we must infer that, where we find an advanced state of navigation, commerce must also have attained a considerable development. Commerce and navigation have so much in common, that it is scarcely possible to treat of their histories separately; and both of them are so intimately connected with, and dependent upon, the progress of arts, that we think it useful to connect in one sketch all that concerns the history of these three branches of human industry.

It would be well, undoubtedly, if we could follow, step by step, the first nations who were given to commercial pursuits; but the history of these times, from being very incomplete, and, above all, very doubtful, does not even enable us to perceive distinctly the political changes in large empires. If mention is made of commercial nations, it is only done incidentally, and only solitary facts are mentioned with respect to nations that had become powerful enough to occupy a station in this world, and to exercise an influence on the destinies of other nations. Thus it happens, that even with respect to countries which became powerful and flourishing by commerce, history does not enable us to find out the beginnings of their commerce, though, on the

other hand, we must suppose that they were, in all countries, nearly of the same nature and description.

For centuries, commerce must have been carried on by exchange from camp to camp, from village to village; and the extent of this commerce of exchange must have entirely depended upon the facility with which it could be carried on, and the wants which were to be satisfied. Among the wants, we have certainly also to comprehend such as were created by habit and opportunity, because it is in the nature of man, that what has become habitual to him, creates further wants, and that he derives fresh habits from whatever he has opportunities of knowing and tasting. It was impossible for the Indian to dispense with the use of our liquors after he had once inebriated himself, and he sacrificed his freedom in order to obtain them with greater facility.

The first nation known, cannot have possessed much commerce, because they lived in fertile countries, which left them not many wants. It would appear, therefore, that the commerce of exchange made at first only slow progress, which was again retarded by the precautionary measures taken by some of the ancient legislators; such was the case, for instance, in Chaldea, in Egypt, where the legislature, from a foresight of the evils following in the suite of commerce, had inspired the nations with a fear of the sea, and a hatred against foreigners, who were looked upon as enemies.

Psammetias was the first king of Egypt who endeavored to remove these superstitions from the minds of his subjects. At first, he only possessed a small portion of the country, until, through the assistance of the Greeks and Phoenicians, to whom he had opened his sea-ports, he succeeded in rendering himself master of the whole country, and in maintaining himself in its possession. This king applied himself to exciting an inclination for commercial activity in his subjects. His son, Necus, adopted a similar policy. It was by orders of the latter or that Phoenician vessels were assembled on the Red Sea, which passed around the Cape of Good Hope, and, after a voyage of three years, returned into the Mediterranean, through the Straits of Hercules; a fact which is the more astonishing, as the construction of vessels could not have attained much perfection at that period. It was not before the time of King Midas, of Phrygia, that anchors were invented; previously large stones, attached to ropes, having served for that purpose. The observation of the flight of birds was the principal means from which navigators judged of their approaching land. Thence it was customary amongst the ancients, for those who hazarded themselves on the open sea, to embark pigeons and ravens, which they set free, in order to direct their course by their flight.

It shows that Necus, to whom history ascribes great talents, would have accelerated the march of civilisation, if he had been able to carry his project of opening and establishing an intercourse between the west, at that time plunged in barbarism, and the east, where some feeble traces of a previous state of advanced civilisation still remained; and if he had succeeded in the execution of a navigable canal, which was to connect the Nile with the Red Sea, Europe would have been enabled to seek for knowledge in India and China. In the latter country we find that, from the most distant times, they cultivated arts which Europe only discovered again a long time after their having been forgotten. Chemistry, for instance, existed in China since the times of the highest antiquity. At all events, it is certain that the priests in Egypt had made discoveries in this science, which, however, they carefully withheld from the nation.

Printing was known in China, India, and Japan; and, from historical documents, it can be proved that, ten centuries before the Christian era, they nursed silk-worms! the manufacturing of glass, embroideries, and tapestries, was also known in a large part of Asia.

These arts, and many more, which were lost, would have been introduced into Europe at the same time with the produce of these countries, if an easy and direct communication had been established between the west and the east; but several centuries

were allowed to pass before the canal, begun by Necus, was executed. From the time of this king, the Egyptians, for a considerable period, divided the dominion of the sea with the Phoenicians. A spirit of industry, or rather some lucky accidents, led the Phoenicians to the discovery of the art of making glass, and of dyeing stuffs with that beautiful purple, called purple of Tyre, which we have, even until now, vainly endeavored to equal by imitation. It is known that the process for manufacturing glass was, in a short time, brought to a high state of perfection in Egypt and Phoenicia.

The Phoenicians navigated the seas long before the time of Psammaticus, who endeavored to render his subjects a commercial nation. They inhabited several towns between India, Syria, and the Mediterranean. They established colonies all along the coasts of that sea into the Straits of Hercules, where, after having found out the British islands, they founded the town of Cadiz. Every thing favored this nation in their commercial speculations; the sea, which was near their habitations; Mount Libanus, which furnished them with wood, whilst sails, cordage, rigging, &c., came in abundance from Egypt; from their vast ports, numerous fleets carried the products of their manufactories, and the produce of the east, which arrived through Syria to Greece and further; the whole commerce of all the east and west was thus thrown into their hands, until Greece became civilised, and sent its vessels into the same ports. It is probable that the Phoenicians were the first people which, before the Greeks, possessed considerable commerce. Homer relates that Ulysses, having landed in their island, found there all the arts of luxury. Nothing, according to this poet, could equal the magnificence of the palace of Antinous. From another passage, in which mention is made of vines that were constantly blossoming, and brought forth fruits at all seasons, it would appear that the Phoenicians already knew the use of both houses, or of some other means which could supply them; though, on the other hand, it appears strange that the process was not also introduced into Greece.

A thing more certain, however, is, that the art of working metals was far advanced. Copper was in use amongst the oldest nations. It served as the principal substance, in compositions, from which they manufactured their bronze or brass, which was a mixture of copper, tin, and zinc. The brass of Corinth, which was a mixture of tin, copper, and gold, was often preferred to gold. From Homer we learn that the arms of the warriors, at the time of the siege of Troy, were generally made of brass. In Egypt, India, China, and amongst all the ancient nations, instruments of copper were found, of which they made use in their temples; the cauldrons of this metal were in high esteem amongst the savages of Acadia. China, Japan, and the island of Cyprus possessed numerous and rich copper mines.

The commerce in tin, which was very considerable, proves the relations of the ancient nations with the north of Europe, and even with India, which, to this day, possesses tin mines. Moses, Ezekiel, and Isaiah, speak of this metal. According to Homer, the warriors covered the heads of their horses with plates of this metal. The ancients preferred the use of tin to that of iron—without which we could not undertake the least work. The Greeks knew that red-hot iron acquired a higher degree of hardness by immersion.

Hercules passes for having first introduced sheep into Greece, but, a long time before that period, red woollen stuffs were manufactured in China. The Egyptians held these stuffs in horror, and had inflicted large fines upon persons burying their dead, or clothing themselves, in these stuffs. In Greece, where the climate was more severe, they knew nothing of this superstition, if we are to call it so, nor a system of prohibition introduced by the priests in favor of their own manufactured goods. It is not known at what period agriculture was introduced into Greece, nor when its inhabitants began to addict themselves to commerce; it is only known that these arts were not introduced in that country until a late period.—*L'Office de Publicité.*

EXPIRED PATENTS.

A LIST OF PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING FEBRUARY 8, 1840.

ENGLAND.

ROBERT RIGG, Bowstead-hill, Cumberland, a new condensing apparatus, to be used with or applied to the apparatus now in use for making vinegar, Feb. 4.

JOSEPH CHRISTOPHER GAMBLE, Dublin, chemist, an apparatus for the concentration and crystallisation of albuminous and other saline and crystallisable solutions, part of which apparatus may be applied to the general purposes of evaporation, distillation, insipitation, and desiccation, and especially to the generation of steam, Feb. 7.

WILLIAM MAYHEW, Union-street, Southwark, and WILLIAM WHITE, Cheapside, London, hat manufacturers, an improvement in the manufacture of hats, Feb. 7.

HUGH EVANS, harbour-master of the port of Holyhead, North Wales, a method or methods of rendering ships and other vessels, whether sailing or propelled by steam, more safe in case of danger by leakage, bilging, or letting in water, than as at present constructed, Feb. 7.

WILLIAM CHAPMAN, Newcastle-upon-Tyne, civil engineer, improved machinery for loading or unloading ships, vessels, or crafts, Feb. 7.

BENJAMIN COOK, Birmingham, brass-founder, improvements in making files of various descriptions, Feb. 7.

SPECIFICATIONS.

NOTICE.

In accordance with the determination expressed in our 26th number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of March 7th. Each party will receive, in addition, a private communication to the same effect.

JONATHAN FELL, of Workington, in the county of Cumberland, for improvements in building ships and other vessels, Feb. 4.

ROBERT WILLIAM JEARRARD, jun., Oxford-street, architect, for certain improved means of retarding wheeled carriages, Feb. 6.

THOMAS BURR, Shrewsbury, lead-merchant, for improvements in rolling lead and other soft metals, Feb. 7.

JOHN FITZPATRICK, Stanhope-street, Clare-market, a new and improved method of making and manufacturing thread and linen, by means of a material not hitherto used for that purpose, Feb. 8.

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.

MEETING OF THE ACADEMY OF SCIENCES, PARIS, JANUARY 27.

(Continued from No. 27.)

M. PELIGOT, a young and talented chemist, has made some discoveries with respect to the sugar-cane, which are likely to be attended with the most important results. At the request of the Minister of Commerce, two most competent judges, MM. Thenard and Pelouze, were appointed to inquire

into the merits of these discoveries, and their report, which is highly favorable to the merits of M. Peligot, was read at the meeting of the Academy today. This report must naturally lead to a discussion on the comparative merits of the sugar from beet-root, and from the sugar-cane; and thus it happens, that a simple scientific experiment, in an humble chemist's laboratory, may give rise to a grave question of political economy, and materially affect our social interests! This fact is valuable, as teaching us not to despise the minute and laborious researches to which the unassuming man of science devotes himself in his quiet and secluded retreat. An analysis, apparently of little practical utility, may eventually be the means of overturning existing international relations, and creating new sources of prosperity. The microscopic observation of the anatomy of a plant, or organic structure, may cause a revolution in agriculture, or materially augment our physiological knowledge.

The question which has been so long in agitation between our colonies, and the cultivators of beet-root sugar at home, appears under an entirely new form, in consequence of the analysis made by M. Peligot. This analysis tends to prove that the sugar-cane is much more rich in saccharine matter than has hitherto been supposed, and that the small quantity now obtained is entirely owing to the imperfect process employed by the colonists, who continue in the old routine that they have followed for so many years. The sugar-cane of Martinique does not contain less than 90 per cent. of the saccharine juice, called *vesou*, and this juice or syrup, when finally made into sugar, ought to produce 18 lbs. of sugar for every 100 lbs. weight of cane, instead of 6 or 8 lbs. as it does at present. If this statement is well-founded, what is to become of the sugar from beet-root, when the colonists shall have adopted the improvements in the management of the sugar-cane, suggested by M. Peligot?—more especially as the saccharine properties of the beet-root are mixed up with coloring matter, and other extraneous substances, requiring great nicety and chemical art to separate them, whereas the sugar from the cane is almost pure, and requires simply to be dissolved in water.

Our imperfect knowledge on this point has arisen principally from the difficulty of obtaining either the sugar-cane in Europe, or the *vesou* in Europe, in a sufficient state of preservation. Vanquelin analysed such as he was able to procure, but they had lost the greater part of their valuable properties. M. Peligot has been more fortunate, and has received from Martinique some sugar-canes that had been previously weighed, as well as some *vesou*, preserved in the most complete manner, according to the new plan invented by M. Appert. He was thus enabled to pursue his experiments with a much greater degree of certainty. It appears that the great faults committed by the colonists in their process of making sugar, consist in the injudicious manner in which they apply heat for evaporating the syrup, and in the little pains they take to avoid producing fermentation, which, it is well known, has a strong tendency to destroy the saccharine matter.

M. BONTEMPS, one of the directors of the glass works at Choisy, read a paper, to which the Academy listened with great attention. With much labor and perseverance, and after ten years of experiments and research, he has succeeded in producing most satisfactory specimens of flint-glass and crown-glass, which he has manufactured expressly for lenses of the purest kind and largest dimensions, for astronomical telescopes, and other optical instruments. M. Bontemps gave a slight but interesting sketch of the various attempts which had been made on this subject, from the time of Guinaut, sen., down to the experiments of Faraday and other men of science in England. He then gave a detailed account of the process for manufacturing flint and crown glass, of as fine a quality as can be desired, together with the exact proportions of the different ingredients. The proportions for flint glass in the melting pots at Choisy are 100 kilogr. of sand, 100 kilogr. of oxide of lead, and 30 kilogr. of potash.

Thus France at last possesses the secret, so long sought after, of manufacturing this valuable crystal. One of the most difficult operations in the manufacture of glass is the working the ingredients together when in a state of fusion (*le brassage de la matière en fusion*). The veins or streaks, owing to the different degrees of density in the materials of which glass is formed, can only be avoided by the greatest accuracy in mixing, and this can be effected only by kneading, as it were, the vitrifying matter.

MM. VAU-TENAC AND THIEULLER presented a little work, which they call a ready reckoner, in which the relative value of the old weights and measures, as compared with the new, is conveniently shown.

Dr. MONTAGNE communicated to the Academy the result of some researches which he has made relative to the structure of the nucleus in the genus *sphaerophoron*, of the order of alge, and lichina of the order of byssi. With respect to the former, he only claimed to describe more particularly, by means of an improved optical instrument, the nature of its organisation, which had already been noticed by M. Féé. With respect to the latter, the lichina, by means of the same instrument, which magnifies in a ratio of 600 to 1, and by dividing the nucleus vertically, instead of horizontally, he has ascertained that the formation of the nucleus in the lichina exactly resembles that in the lichen or liver-wort; consequently, this plant, which has hitherto been universally considered as belonging to the order of alge, appears from its organs of fructification to belong rather to the order of lichens or byssi.

M. DESPRETZ presented a third paper on the maximum of density. Pursuing his learned and laborious investigations with regard to water, and saline, acid, or alkaline solutions, he has established many important scientific facts.

1.—That the temperature of the maximum of density of pure water, is, as nearly as possible, 4 degrees.

2.—That all aqueous solutions have a maximum of density.

3.—That this maximum, in all solutions at all concentrated, is below the temperature of congelation in a state of agitation.

4.—That it is lower in proportion to the density of matter dissolved in the water.

5.—That in thermometric tubes, soldered to small reservoirs, water and aqueous solutions can resist cold much below the temperature of their congelation. This circumstance enabled M. Despretz to discover the existence of a maximum in liquids, although it had been denied by many eminent physicians; and even since the publication of M. Despretz's discoveries, an English physician, without taking the precautions in making his experiments recommended by M. Despretz, has ventured to deny the existence of a maximum in sea-water, and in saline solutions. In large tubes, or in small vials with narrow necks, the congelation of these liquids takes place, without at all showing the existence of the maximum. But as M. Despretz made the experiment last year in presence of many academicians, with thermometric tubes and narrow reservoirs, the dilatation of the liquid by cold invariably takes place without congelation, and the existence of the maximum is consequently proved.

Dr. JULES GUERIN read a treatise upon the intervention of atmospheric pressure in the action of serous exhalations from the human body. His reasoning is founded upon its anatomical structure, upon experience, and upon physiological and pathological observations. In the parts which are the seat of serous exhalations, the articular cavities, and the cavities of the pericardium, of the pleuræ, and of the peritoneum, there is a similarity of structure and arrangement, in consequence of which, though enclosed on every side, they present periodically either a fresh space or an enlargement of the existing space. This fact leads to the conclusion that there is a certain tendency to a vacuum, a rarefaction of the fluids contained in these cavities,

and consequently there is no longer an equilibrium between the internal and external pressure.

It is well known great elevations have an influence upon the articular movements, and render them more difficult. This difficulty is explained by the diminution which takes place in the secretion of syncooid, resulting from a diminution of the atmospheric pressure. When the limbs have been for any length of time motionless, they are not moved without inconvenience, and uncomfortable sensations in the articulation; and a long cessation from motion in the articular articulations is sometimes sufficient to produce ankylosis. The experiments of M. Jobert have shown that adhesion between the laminae of the peritoneum is easily attainable; the contrary is the case in mucous adhesions. The laminae of the different serosities readily contract adhesion at the end of any disease of which they have been the seat. Wounds, which penetrate to the articulations, the peritoneum, the pleuræ, or the pericardium, when exposed to the air, are accompanied with special symptoms. Articular rheumatism, and hydroarthrosis which often follows it, are found both successively and simultaneously in the different articulations. The cause of these facts, and many others which might be cited, may be traced to the influence of atmospheric pressure upon the action of serous secretions.

STATISTICS.—PARIS.

Table showing the total number of the Population, and the number of the Poor, in each arrondissement.

Arrondissements.	Total Population.	Number of Poor.
1st	82,758	3,599
2nd	90,292	2,046
3rd	57,059	2,406
4th	50,123	3,129
5th	82,234	4,699
6th	94,108	6,936
7th	68,407	3,936
8th	82,094	9,938
9th	71,750	4,924
10th	99,173	5,073
11th	58,767	3,896
12th	82,361	11,357
Total	919,126	62,539

Thus in Paris about 1 in 14 of the whole population is a pauper.

FRENCH POST OFFICE.

The revenue of the French Post Office during the last four years has been as follows:

	Francs.
1836.....	37,000,000
1837.....	40,382,368
1838.....	42,242,271
1839.....	42,070,000

The revenue in 1821 did not exceed 23 millions.

HOLLAND.

THE MAURITSHUYS.

The most patient, and the most wealthy collectors in the world, are the Dutch; and they estimate the value of their fortune, not only by the number of merchant vessels and ingots of gold, but by the number of pictures and curiosities of all sorts which they possess. One distinctive trait in the Batavian character, is the mania for accumulating in private cabinets, valuable drawings, antiquities, and all kinds of objects of art and vertu, especially those that are remarkable for being rare and fantastic. Where such a taste is general among all classes of people, we naturally look for mild, upright, and

primitive manners. And, in point of fact, whilst their neighbors have been absorbed in the distract agitations of public life, the Dutch have remained faithful to their household gods; and are, perhaps, the only nation in Europe, who at the present moment know how to enjoy the quiet pleasures of the domestic hearth.

In Holland, every man is an *amateur*, from the rich burgher of Amsterdam, to the poor fisherman of the Zuyderzee. The opulent ship-owner sinks millions of florins in a splendid gallery, that he may be in the fashion; the fisherman adorns his lowly cottage with some sea pieces, which remind him alike of the dangers and the delights of his adventurous life; of the troubled sea, and of the sheltering port. In almost all the cities are private collections, many of which are so valuable, that it would be difficult even to make a choice between them, and the superb galleries of Soult and Aguado. Whilst visiting these extraordinary repositories of art, it is no uncommon occurrence to hear your Dutch cicerone observe, with imperturbable phlegm:—That picture was put there by Terburg himself;—Wouverman hung up this;—Rembrandt fancied that the light here was particularly favorable, and insisted upon a place for one of his happiest efforts of clair-obscur, &c. &c.

With respect to curiosities properly so called, they are met with at every turn. Leyden has its Japanese and Egyptian Museum; Nimeguen can boast of its cabinet of Roman antiquities, and armour of the middle ages; and Broek of its Chinese treasures, whose grotesque beauty is in keeping with its own singular and picturesque appearance. But the Royal Cabinet of Curiosities at the Hague, is the most extraordinary, the most unique, and the most colossal of all. The Mauritshuis (Prince Maurice's house), is divided into two departments: the first, called the *musée*, contains about three hundred pictures, chiefly of the old Dutch school:—in the second, there is a most astonishing assemblage of odd things (*choses bizarres*), that must wonder at finding themselves met together, (*qui hurlent de se voir accouplées*); this is the Royal Cabinet of Curiosities. It would be difficult, and by no means interesting, to describe one by one all the articles in this queer Pandemonium, where toys, trifles, and play-things are on the same table, which presents to the view of the learned, the artist, and the patriot, objects of science, valuable varieties, and sacred relics. Among seven hundred and sixty-seven different articles, are tobacco-pipe cleaners, pots called *jukoba-kannetjes*, models of vessels made of cloves, cocoa-nuts filled with incense, &c. &c. There are, however, many other things of more value, a list of which may be acceptable to your readers. The first room appears to be set apart for historical curiosities. Amongst other things in it we find,—the broad-brimmed hat, the doublet, the gold-enamelled watch, and the medal which William the Taciturn had on the day of his death; also the two inusquetoons, the leaden ball extracted from his wound, and a copy of the sentence which condemned Gerard to be torn in pieces by four horses; some of the hair of Jacqueline of Bavaria, taken from her head after she was in her coffin; a handful of feathers from the bed of Peter the Great; the Crown of the King of Ardra, who was conquered by Admiral Reyster; the sabre of the heroic Van der Werf; an ancient Jewish silver penny, a rare and valuable coin; the truncheons of command borne by the Admirals Piel, Klein, and Van Tromp; a couch from the prison of Olden Barneveldt; Spinola's goblets; the shirt and under-waistcoat worn by William III. the last three days of his life, after the fatal fall from his horse; the hair of William IV.; a model in ivory of the knife with which Ankastrom assassinated Gustavus III., King of Sweden (is M. Scribe mistaken in arming the assassin with a pistol?). In reference to more modern times, we find,—a paper temple in allusion to the peace of 1814, forming an ingenious, not to say a spiritual allegory; a sabre and musket from the armed sloop of Van Speyk; a box containing his hero's hair, his decoration as knight of the Lion

of the Netherlands, some of the cloth of his coat, and models of two boats, one made from part of the iron work of the sloop, and the other from a cannon; and, lastly, a chair and cream-jug used by General Chasse, in the casemate of the citadel of Antwerp, during the bombardment.

From what may be called the historical saloon, you pass to a saloon that may be named after Cook and Dumont-Durville. Here you may make the tour of the world in a few minutes, and see Asia, Africa, and Australia. The pointed cap of the *Soesoehoenan* of *Diogocarta* lies beside the golden crucifix of his fellow dignitary, the *Soesoehoenan* of *Sourakarta*; here is to be seen a Turkish passport in Arabic, a tobacco-pouch, a purse, a pocket almanac, and a fan, all Turkish; a little further off state mantle, a tunic, a diadem, and other regal ornaments, all of feathers from Australia; and close to them a mummy, lying at the bottom of an oddly-shaped canoe; this is a fisherman of the island in his *cakaj*. After passing several horrible figures of Hottentots, Caffres, and Namaquas, preserved in glass cases, you reach the vast empire of Japan, with its remarkable despotism, its myriads of cities, its strange manners, and variegated costumes. Through the glass of this case of Mahoni, you behold the sacerdotal Emperor of Japan; his empress, the guards, musicians, priests, and courtiers are all before you. Through another you behold a Japanese family in their private apartment. Do you wish to know what progress the military art has made amongst them; you have only to open a cabinet, and their barbed steeds and splendid armour are before you. Are you curious about their architecture, their manners, and their fashions?—here is a model of one of their houses, there a wardrobe containing a collection of their richest dresses; here you may see preparations making for a marriage amongst them; there, for a tea party of distinction. On this shelf are various head-dresses, worn both by the men and women of Japan; on that, are several yards of their plaited hair. When you are tired, you may lie down in a palanquin, and study a map of the empire, made by the Japanese themselves.

In a cabinet of curiosities, there would naturally be a place for China, the most curious of all nations. Accordingly, we find the Celestial Empire represented in detail with admirable patience. Nothing has been omitted in this colossal exhibition. The Emperor in full costume, the mandarin bursting with gravity, the coquette displaying all her attractions, the *pousah* in everlasting good humor, all is there; from the temples to the porcelain tower of Nankin! Rarities, nothing but rarities! Baskets of flowers and fruits, and instruments of torture; Chinese ready-reckoners, and Chinese paintings in oil, close to the model of a Chinese woman's foot, and a very pretty foot it is. In the multifarious collection are mirrors and metal lamps; spectacles and gongs; playing cards, and a small pipe for opium smoking; a tumbler and his ladder; the game of chess and the game of goose; dice, and a pair of bellows; a paper lantern, and copper money; perfumed candles, and an allumette; a razor, and a pair of nut-crackers; a knife for cutting tobacco, and drinking goblets; &c., &c.

It would fill a volume to enumerate all the rare, singular, valuable, ill-shaped, monstrous, and ridiculous articles in the Royal Cabinet of Curiosities at the Hague. It is quite overpowering to the imagination. Every age, every people, every part of the world, is successively presented to the astonished visitor.

If a few absurd objects were taken away, the Royal Cabinet is an establishment highly deserving of praise. The antiquary, the historian, the man of science, the traveller, and the artist, may pass many delightful hours in the Mauritshuis. The antiquary may save himself much long and troublesome research; the historian may trace the manners and customs of nations long extinct; the man of science may observe the progress of scientific knowledge; the traveller may call to mind his distant adventures; and, lastly, the artist may find suggestions, details, accessoires, that he would search

for elsewhere in vain. The Royal Cabinet is as useful as it is curious, and offers a worthy object of imitation to neighboring nations.

T. J.

STATISTICS.

DUTCH MERCHANT-NAVY.

The port of Amsterdam has 185 vessels: of these, 110 make the long voyages (*voyages de long cours*), that is, sail beyond Cape Horn and the Cape of Good Hope; 6 go to Havannah; 37 to Surinam; 9 to America; 2 to the Levant; and 21 are general traders.

Rotterdam has 103 vessels: of these 84 make the long voyages; 5 go to Surinam; 2 to the Levant; and 12 are general traders.

Zaandam has 6 vessels: 4 that go to Surinam, and 2 that make the long voyages.

Monnikendam has only 1 vessel, which trades in the Mediterranean.

Harlingue has 3 vessels which go to Havannah.

Dordrecht has 22 vessels: 12 of which make the long voyages, 2 go to Surinam and 8 are general traders.

Ablaserdam has 10 vessels, all making the long voyages: Schiedam has 6 vessels, 4 which make the long voyages, and 2 which go to America.

Middelbourg has 7 vessels, of which 6 make the long voyages, and 1 goes to Surinam.

Groningue has 2 vessels, which make the long voyages.

Lemmer has 1 vessel, that goes to Surinam.

Le Pekel has 5 vessels: one of which goes to Surinam, and 4 are employed in the coasting trade.

Veendam has 3 vessels: 1 of which goes to Surinam, and 2 to the Baltic.

In the Dutch merchant-navy there are besides 540 vessels of different degrees of tonnage, such as the *koffs*, *smaks*, and *tjalks*, which are employed in the coasting trade.

BRUSSELS.

STATISTICS.

Table showing the relative amount of the town dues of Brussels, in the years 1838 and 1839.

Articles paying dues in	1838	in	1839
Frances.		Frances.	
Liquors	963,326		904,559
Estatables	663,750		652,138
Forage	113,748		117,104
Fuel	442,833		420,292
Materials	153,666		144,094
Warrants	38,822		37,307
Total	2,376,145		2,275,494

Although there was no alteration in the municipal taxes during these two years, the above table shows a decrease in the amount of the town dues in the year 1839, as compared with the year 1838, of 100,000 fra., or 1.24 only. We say only, because, according to the receipts of the other great cities of the kingdom, and according to the actual state of the town dues of Brussels, at the end of the first nine months of the year 1839, a much larger decrease might have been looked for. This would have been the case if the receipts for the last three months had not been equal to those for the same period during the former year.

The principal decrease is in the article of liquors, which is mainly due to the high price of grain, in consequence of which there has been a considerable diminution in the manufacture of beer and gin. There is also a decrease in the amount of dues upon fuel and materials.

GHENT.**PRISONS OF GHENT.**

On the 4th January, 1840, in the *Maison de Force*, there were 1,067 prisoners, viz.:—751 men, 260 women, and 56 soldiers. In the *Maison d'Arrêt*, there were 122 men, 18 women, 2 children, and 49 soldiers.

STILL-BORN CHILDREN.

At one period, the disproportion between the number of children born alive in Ghent, and those who were still-born, was so great that the municipal authorities thought it requisite to appeal to a Medical Committee on the subject. During the last two years, however, there has been but little improvement in this respect, as appears from the following statement.

In 1836 the number of still-born children was	215
1837	245
1838	206
1839	238

PERSIA.**COMMERCE OF PERSIA.**

There has been of late years a considerable increase in the commerce between Persia and Europe. In each province the customs are farmed annually. According to the statements of those who farmed them in 1837, the average amount in the northern provinces of the importations was 20 millions of francs; of the exportations, 12 millions. This statement does not include the importations from Russia, through the frontiers of America, and the southern coast of the Caspian, in the neighborhood of Recht. In 1836, the importations through America amounted to 4,900,000 frs., and the exportations to 2,175,500 frs. Nothing is known of the trade carried on through Recht. It is to be presumed, that the persons who farm the customs, return the amount of the importations and exportations rather under than over the truth, for fear of being asked a higher price for their contract.

**RAILWAY INTELLIGENCE,
DOMESTIC AND FOREIGN.**

RAILWAY PROSPECTS.—A remarkable consideration is, that these works have been carried on at the expense and enterprise of individuals, without any assistance from the national resources, and, consequently, there have been many cases of personal hardship and loss, from the inability of shareholders to pay up the calls in a time of much monetary pressure. The prospects, however, are happily brightening of the projectors and supporters of the system. Those who were open, or insidious opponents of the system, have become converts, and the superiority of railway travelling seems almost universally acknowledged. Still, however, to persons who have embarked "their little all" in these undertakings, and who have borne with patience all the deterioration in value to which their property has been subjected—the inquiry, "Will railways pay?" must be a very important consideration. This enquiry may be unhesitatingly answered in the affirmative; and in nearly all the main lines now under completion in this country there will be a high remunerative return. The great trunks with which we are acquainted, viz.—the Grand Junction, the London and Birmingham, the Great Western, and the South Western, have been advancing in their returns of traffic ever since their opening. The Stockton and Darlington, being a railway be-

tween two places of not much population, yields a return of 12 per cent. per annum; the shares, originally 100*l.* are now worth 150*l.* premium. The Great Western, respecting which so much discussion had arisen, principally on the subject of the broad gauge, has fully established its claim to public patronage and favor. There is no question now but that it stands at the head of all the other lines for smoothness of transit and for security of locomotion. The wide base necessarily offers the best pledge of safety. By the returns published since its opening to Twyford (31 miles from the metropolis,) during the autumn, it carried more than 2,000 passengers per diem. It is now shortly to open about 30 miles further, or 60 miles from London—and when the whole line is completed also between Bristol and Bath, by many intelligent persons it is considered, that its traffic will not be inferior to the London and Birmingham, or about 12,000 per week.

The shares, which had fallen during the discussion upon its merits some time since, are now recovering their value, and as they are quoted above par, they afford the best prospect for investment to the capitalist, who of course will remark a much larger margin for advance than in any of those lines which have now attained so high a premium.

There cannot therefore be the slightest doubt that the present price of shares in many of the railways, affords a strong ground for investment. Should, for instance, the Great Western realise any traffic at all comparable with the London and Birmingham, the shares of that company would quickly advance to 50*l.* and 60*l.* premium. As this, therefore, appears a favorable opportunity for purchase, it also is desirable that parties who are small holders and who have been sufferers through the recent pressure, should not sacrifice their shares, if there is but any possibility of their being enabled to retain them. I need not add that there are other lines well deserving attention, such as the Birmingham and Gloucester, the Bristol and Exeter, and the Cheltenham and Great Western. On the former of these, the shares have lately risen 10*l.* per share.—*Gloucester Chronicle.*

RAILROAD THROUGH WORCESTER TO PORT DYNLAEN.—The following notice of motion was recently given by Capt. Winnington, in the House of Commons:—"That an humble address be presented to Her Majesty, praying that Her Majesty will be graciously pleased to direct that the engineers who have been appointed, in pursuance of the address of this House, of the 12th day of Aug. last, do, in addition to the report thereby required to be made, report on the merits of the projected line of railway from London to Port Dynlaen via Worcester and Newtown."

LIVERPOOL AND MANCHESTER RAILWAY COMPANY.—The half-yearly meeting of the proprietors of the Liverpool and Manchester Railway Company was held a few days since, at the Cotton Sales Room, in the Exchange Buildings, and was most numerously attended by shareholders from all parts, owing to the uneasiness which many felt from the torpid state of the shares in the market, whilst all others in the neighborhood were so buoyant. CHARLES LAWRENCE, Esq., took the chair; after which the report was read by MR. BOOTH, the treasurer, in which comparisons were drawn with many of the items of expense for the London and Birmingham Railway—hopes held out of retrenchment in some of the branches of expense—reasons given for delay in not forming a junction with the Manchester and Leeds line for the present—and such a prosperous amount of receipt announced, as warranted a dividend of five per cent. for the half-year, leaving a considerable balance in favor of the company. After some discussion on the report, a proprietor, from Manchester, proposed the election of William Garnett, Esq., as a director, in lieu of N. Robinson, Esq. resigned; and as it was felt generally by the meeting that a director of local experience and influence there was desirable, Mr. Garnett was forthwith elected. It was then stated from the chair, that a debt of about £200,000,

existed, and that some further sum might possibly be required, to meet the expense of new buildings, for stations, warehouses, &c., on account of the increased business of the company, and its accommodation in premises, &c., to the Grand Junction line. A dividend of five per cent. for the half-year was then declared, payable on the 10th of February; and the meeting separated, after expressing, for the chairman and other directors, their acknowledgments for their important services.—*Liverpool Standard.*

FRANCE.—The system of guaranteeing interest by the state is a material feature in the resolutions come to by the railway commission—not only in regard to the Orleans line, where the first attempt has been made to call it into use, but in regard to all operations of magnitude and public utility which may hereafter be undertaken by private capitalists. The shape in which M. Rivet, the spokesman of the commission, submitted the propositions of the Orleans Company to the commissioners was, to grant a guarantee for interest at 3 per cent. on an unlimited capital, or on forty millions, with a conditional loan of fourteen millions more. Both requests were rejected as a matter of course, government being unwilling in the one case to incur an unlimited responsibility, and in the other to ensure to the company a loan, the necessity for which was not clear. The company were wrong, in the first place, in coupling the request for a guarantee for interest with a request for a loan, which in itself is justifiable and expedient; and in the second place, the company ought to have limited their demand for a guarantee to a fixed sum, or, rather, the commission should have made this point a matter for especial consideration. The chairman of the company, M. Bartholony, solicited a personal interview, but was refused. M. Bartholony is the author of a treatise on public works, and in it he has enlarged upon the subject of guaranteeing interest with much judgment and strength of reasoning.

The company then requested a guarantee of interest upon fifty-four millions, a sum which would cover every casualty, but the proposal has not been even examined. The determination of the commission, in regard to a subscription for sixteen millions, is bad in principle, and can serve no other purpose but to disembarrass some of the banking houses which are involved through this undertaking, and will not at all ameliorate the position of the other shareholders by restoring confidence. But let the directors take courage, and let M. Bartholony stand by the system in its application, which he has advocated theoretically, and the Chambers will not withhold the necessary means.

The purchase by government of the Corbeil road, and its execution by the administration of roads and bridges, is another instance wherein it is attempted to prove the importance of private enterprises, after contributing to its defeat.

Among the deliberations of the commission are noticed four modes of extending the aid of government to the formation of railways:—pecuniary aid is wholly excluded; taking shares is admitted with difficulty, and is an exception to the general rule; loans are confined to undertakings in course of execution, which have been stopped by a failure of funds; lastly, guaranteeing interest meets with favor, as the most economical, and efficacious in receiving the co-operation of private enterprise in forming works of public utility; and yet upon the very first opportunity of putting it in practice under very auspicious circumstances, the commission have receded from their previous resolutions, and have had recourse to a system which they had almost abandoned.

Is it that government apprehend the rejection by the Chambers of a system originated solely in France? No: the supposition is groundless; for M. Dufaure appeared last session to be convinced of the advantage of guaranteeing interest, and, beyond doubt, the Chambers will prefer guaranteeing interest at 3 per cent. to private companies,

rather than borrowing at 4 per cent. to enable government to execute works upon a gigantic scale.

BELGIUM.—The formation of the section of the railway from Liege to Pepinster is going forward rapidly, and government intend to exact a strict fulfilment of their engagements by the contractors, even to ensuring its completion by a fixed day. It is also desirable that the minister of public works should devote simultaneous attention to the works from Pepinster to Verviers, and thence to the Prussian frontier, whereby much time may be saved, to compensate for the delay which occurred in forming the section from Liege to Verviers.

PARIS BOURSE.—Notwithstanding the uncertainty which exists as to the intentions of government, the following are the transactions in railway shares.—St. Germain, 372 francs 50 centimes; Versailles (right bank) 500 to 497fr. 50c.; Versailles (left bank) 540 to 548 fr. 75 c.; Orleans 460 fr.; Strasbourg, 335 to 342 fr. 50 c. and closed at 340; Mulhouse to Thann, 380 to 385.

PRUSSIA.—187,000 écus of Prussia have been taken on the line from Berlin to Potsdam, and the shareholders have received a dividend of 8 per cent. after making deductions for a sinking fund. The fuel employed is wood.

BELGIUM.—During the recent tempest, the following occurrences took place on the Belgian railway:—

At Malines, a train of carriages broke loose from the wedges which retained them, and in their course threw down and seriously injured an engineer.

No less than three engines were put in requisition to convey the train from Bruges to Ostend; and in the environs of Wilmersom, some wagons, which were stationed in the neighborhood, were blown upon the railroad, by which a child's arm was unhappily broken.

CHESTER AND BIRKENHEAD RAILWAY.—The application to parliament made by this company, for leave to raise additional capital by the issue of half-shares, appears to have created a feeling to the prejudice of the undertaking, greater than we think could have arisen, unless aided by misrepresentation or the prejudices of opposing interests. The necessity for increase of capital, beyond the original estimate, was announced by the directors at the last half-yearly meeting, and the cause which had led to it fully explained; and although, as supporters of the railway system, we deprecate the too frequent recurrence of discrepancies between the parliamentary estimates and the actual cost of railways, yet we must express our conviction that the explanation then given ought to have been perfectly satisfactory to the shareholders and the public. As respects the former, such, we believe, has been the case; and yet the bare fact of this application being necessary has afforded a handle to parties interested in depreciating its stock, which they have not been slow to lay hold of. The increased expense of the line has been mainly owing to one or two causes, over which the engineers could have no control, and which they could scarcely foresee. The directors have had to submit to some very exorbitant charges for land, and have been also induced (we think wisely) to purchase for stations, &c., to a more ample extent than was originally contemplated or may at first be wanted. An increase has also been made to the weight of the rails, by which greater durability is insured. Some contingencies have occurred, but to a trifling extent, to increase the cost of executing the works; but in most cases, we believe, the enlarged cost in this way has been caused by alterations of the original plans, adopted with a view to the general improvement of the line, the benefit of which will arise from increased facility of working. A considerable sum has also been sunk in purchasing the rights of the Woodside Ferry Company, by which the directors secure in their own hands a valuable property, together with the greatest degree of accommodation for their Liverpool traffic. Under these circumstances, an application to parliament became indispensable,

in order to complete the undertaking, *thus enlarged*, and to provide the means of conducting the carrying department *efficiently*. Supposing that the full amount applied for—£125,000—should be required, in addition to the original capital of £250,000, the entire cost per mile would not then exceed £27,500, which, upon a short line of fifteen miles, is not excessive, and upon which the estimated traffic of the company would afford an ample remuneration. We have no reason to believe, however, that a small portion only of the whole amount of the new shares will be called up: yet we quite approve of the policy of the directors, in applying for power to raise a larger sum, in order to enable them at a future time to avail themselves of any contingency which may offer for the advantage of the undertaking. The works upon the line are rapidly and satisfactorily progressing, and are fully expected to be completed in the course of the ensuing summer. We would, therefore, strongly urge upon those who have so far adhered to the undertaking, to continue their confidence until its opening, when we think the evil prognostications and the interested motives of those parties who are now engaged in decrying it will be disappointed. Until within a few months, its stock has maintained itself firmly in our market, and however much, and for whatever motives, it may be *temporarily* depreciated, we have little fear of its being for the present a good and safe investment, and, ultimately, when the resources of the line shall be fully developed by the proposed Rusdon Branch, and a connection formed with the rich mineral district, to which that branch will give it access, a highly profitable one.—*Liverpool Standard*.

THE GREAT WESTERN.

Great Western.—The difference between the passages of the sailing vessels with the Great Western, taking those which started either on the same or within a few days of her, is very striking, as the following summary will exemplify:—

	Great Western.	Liners.
1st voyage ..	15 days.	29 and 27 days.
2d do. ..	14½ days.	32 and 35 days.
3d do. ..	14 days.	35, 36, and 32 days.
4th do. ..	16 days.	36 and 36 days.
5th do. ..	19 days.	42, 31, 32, and 48 days.
6th do. ..	19 days	41 and 44 days.
7th do. ..	21 days.	38, 31, and 34 days.
8th do. ..	13 days.	39, 33, and 35 days.
9th do. ..	16 days.	40, 43, 40, and 34 days.
10th do. ..	17 days.	40, 38, and 36 days.
11th do. ..	13 days.	48, 30, 23, and 36 days.

The homeward passages are not quoted.

Mail to New Zealand.—The Royal Mail Steam-packet Company, with whom the Government entered into a contract to convey the mails to and from the West Indies, are making arrangements to extend their line of communication to Australia and New Zealand, by means of sailing packets from Panama. It is calculated that the course of post from London to New Zealand will be, at the utmost, only five months and a half.

French Trade with China.—The Chamber of Commerce of Marseilles has published the following notice to the persons connected with the shipping of that port:—"The erection of the consulate of Manilla into a consulate-general for Indian China, the creation of a consulate at Singapore, and the approaching establishment of consular agents on various points of the Indian seas, combined with the advices of the Chamber of Commerce has received on the importance and the nature of the business transacted at the port of Canton, give reason to expect that a French agent will be established there, and the Chamber therefore calls the attention of the ship-owners of Marseilles to the advantages which may be derived from relations duly followed up with the above countries."

INFRINGEMENT OF A PATENT:—

CLARIDGE'S ASPHALTE.

In the Court of Queen's Bench, on Thursday, an action was brought by Mr. Claridge against Mr. Latrade, for an infringement of his patent for Asphalt Pavement. The defendant pleaded several pleas, denying, 1st, that he was guilty; 2dly, the novelty of the invention; 3dly, the sufficiency of the specification; and alleging, 4thly, the invalidity of the patent, on the ground that more than 12 persons had been assigned shares in it. The jury found a verdict for the plaintiff on all the issues of fact; but for the defendant upon the question as to the right to grant a licence to more than 12 persons, with liberty to the plaintiff to move to enter the verdict on last issue for plaintiff.

IMPROVEMENTS IN LOCOMOTIVES.

We last week presented our readers with the elevation of one of the locomotive engines on the Belgian railroads, pointing out by references,* the various parts of the machinery; the details will be gone into on a larger scale in the course of a few weeks. The engraving introduced to day (No. 2, of a series,) is the longitudinal section of the locomotive engine given in our last.

EXPLANATORY REFERENCES.

a a. The internal fire-box, similar in shape to the external, and generally made of copper plates, $\frac{1}{4}$ of an inch thick at that part of the fire-box only where the tubes are inserted, $\frac{1}{2}$ an inch for the front plate at the fire door, and $\frac{1}{8}$ for the roof and sides.

b b. Iron bars bolted or riveted to the roof of the fire-box for its better support.

c c. Copper stay bolts, capped and riveted for staying external casing and fire-bars together.

d d. A piece of iron, same shape as fire-door, inserted between the external and internal fire-box, and riveted.

2 2. The brass tubes, showing method of inserting them into the fire-box plate—a steel hoop or ferrule is driven tightly into the interior of the tube which compresses the exterior part of the tube against the sides of the hole in the plate and makes it perfectly water-tight.

e. A leaden plug—should the water at any time become too low, so as to uncover the roof of the fire-box, the plug will melt by the heat; the steam will rush into the fire-box and extinguish the fire.

f f. The fire-bars.

f' f'. A frame on which the fire-bars rest.

g g. Steam dome, made of iron.

g l. Steam pipe, leading to the regulator.

h. The regulator, i i the rod, e the handle by which it is opened and shut.

k. A hanger to support the rod.

l l. The steam-pipes leading from the regulator to the steam cylinders m l m l.

n n. The valves.

n l. The rod or spindle for connecting the two valves.

n 2. Rods for connecting the valve spindle to the arm fixed on the way-shaft z.

n 3. Iron bracket, for supporting the end of valve spindle.

o o p. Steam and exhaust passages.

q. The piston.

r. The exhaust pipe, conveying the waste steam into the chimney.

s s. The eccentrics.

s l s l. The eccentrics rods.

t t. The wood sheathing which covers the cylindrical part of boiler.

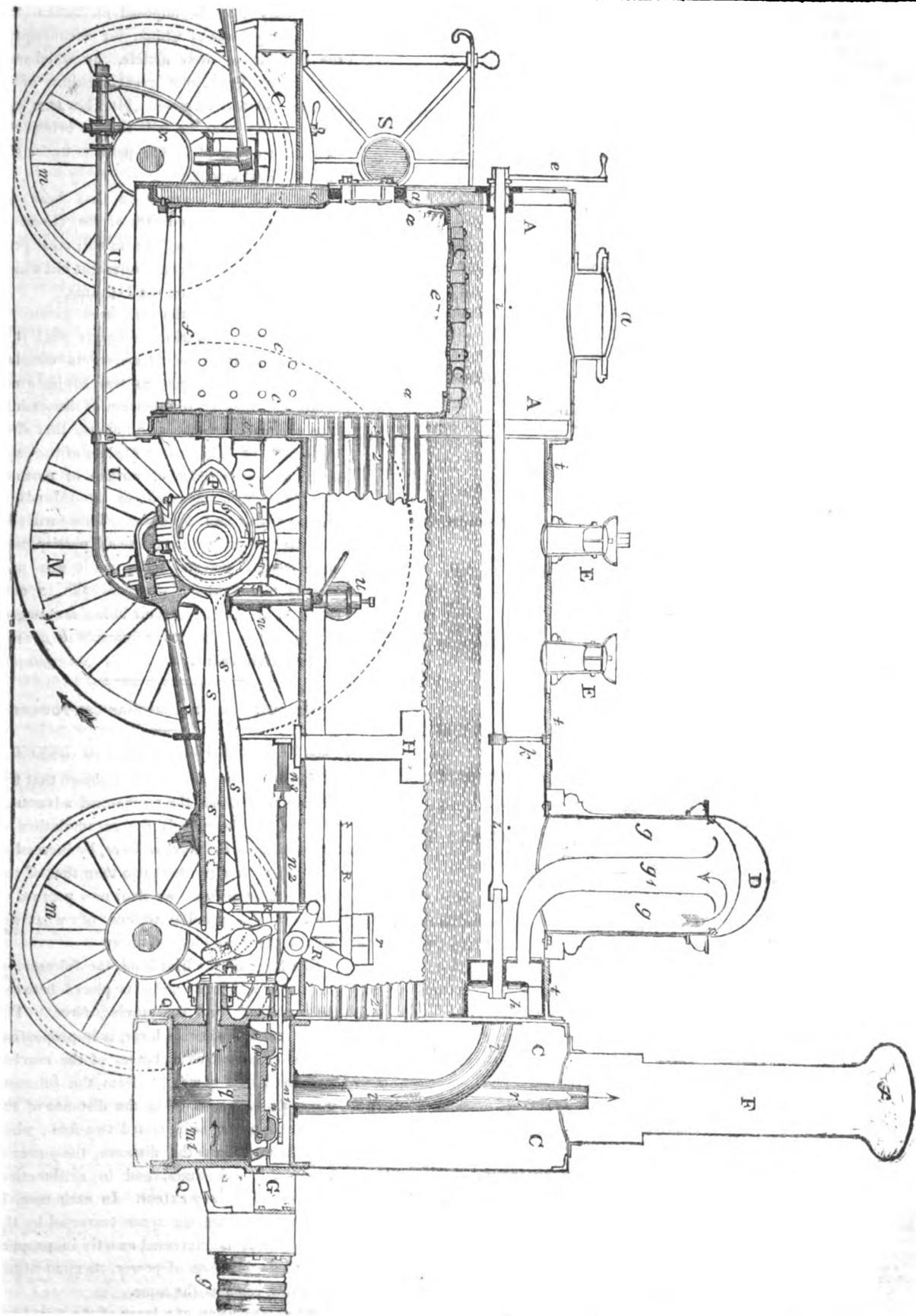
w w. The feed-pump valves, generally spherical or ball valves.

* * An article will shortly be given, from the pen of A. LIVINGSTONE, Esq., on the advantages of using double valves for locomotive engines intended for the transport of merchandise,—the result of actual experiments made at Brussels.

* These references are still preserved in the annexed engraving.

ONE OF THE LOCOMOTIVE ENGINES ON THE BELGIAN RAILROAD.

No. 2.—THE LONGITUDINAL SECTION.



NOVEL ILLUMINATION—The beautiful and intense light produced by the combustion of lime was employed on Monday last, for the purpose of illuminating the turrets of Vanbrugh Castle, the residence of Mr. Potts, situate at the eastern entrance to Greenwich-park, on the top of Maze-hill. We understand that this light, which is generally known as the Drummond light, will be renewed at 9 o'clock every Monday evening of Her Majesty's honeymoon, with different modifications, and directed towards London, so that any one may contrast the intensity and penetrating power of different varieties of light. The effect of two lights used on this occasion, which were placed at some distance one above the other, was extremely brilliant and splendid; and although the moon shone brightly, the lights were discernible at a considerable distance.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
Bogota	Denmark	Nevis
Bahamas	Dominica	New Brunswick
Barbadoes	France	Newfoundland
Berbice	Gibraltar	Nova Scotia
Bermuda	Greece	Quebec
Brazils	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburgh	St. Kitts
Canada	Helligoland	St. Lucia
Caraccas	Honduras	St. Vincent's
Cartagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Columbia	Laguayra	Trinidad
Corfu	Malta	Zante
Cuxhaven		

It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 O'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their News-men, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 6, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"A. D. S.;" Hampstead.—We have answered your note by post.

"G. R. Nathan."—Two, four, or six months; but not beyond that period.

"A. C. Z."—No,—the time for specifying cannot be extended, if your patent has passed the great seal.

"P. O. O."—Such an alteration would not support a new patent.

"R. Parker."—Either before the attorney, or Solicitor General; as you please.

"T. J. L."—There can be no doubt that such an arrangement would constitute a partnership.

"A Subscriber" asks, "Do you, Mr. Editor, know the name of the individual who is now experimenting in Russia on the application of electro-magnetic power to boats?"—We cannot ourselves answer the question satisfactorily, but shall be obliged if any of our readers can give us the information, and any further particulars.

"A Constant Reader," who addresses us at great length on the subject of the "New Metal Exchange," and laments the incompetence of the committee chosen to select an appropriate design,—is informed that we quite agree with him in the

justice of his remarks; but are not all "jobs" alike? Remonstrance would be vain, and the insertion of our correspondent's letter would occupy much room to little purpose.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSO CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, FEBRUARY 15, 1840

The East India Company have at length taken up the question of equalisation of duties, and a petition from that important body was presented to the House of Commons, on Tuesday, in which they complain of the injuries sustained by the manufacturers, and growers of produce in the dominions of the East India Company, from the higher duties to which they are subject. The improvements in the manufacture of cotton goods have enabled the British manufacturers generally to undersell the Indian in their own markets, but at the same time it seems a matter of just complaint that a higher duty should be charged on the importation of those articles of Indian manufacture, for which there continues a demand in this country, than is levied on English goods on their importation into India. The Company, at the same time that they petition for an equalisation of duties, also pray that a

lower duty may be imposed on Assam tea than on the teas of China, for encouraging the growth of that article, by which we may be rendered in a great measure independent of the Chinese. Mr. EWART has given notice that he will shortly bring the subjects mentioned in the petition under the notice of Parliament.

The Designs-Copyright-bill has been referred to a Select Committee of the House of Commons, and the same course will most probably be pursued with the Copyright bill which was read a first time on the 11th inst.

An important notice has been given by Lord John Russell, which indicates that it is not the intention of Ministers to dissolve the present Parliament, as was conjectured, before the regular termination of the session. The notice to which we allude is, that after the 1st day of June next, "Orders of the day" shall take precedence of notices of motion, on Thursdays, as well as on Mondays, Wednesdays, and Fridays. This will be a matter of great interest to all parties connected with private bills, as it was previously feared that, after all the expense incurred in advancing their bills a few stages, they would have had to commence *de novo* in another Parliament.

PHILOSOPHY OF THE MECHANICAL POWERS.

No. 2.—THE THREE KINDS OF LEVER.

Having, in our last number, shown that the principle on which the mechanical advantage of the lever depends is the accumulation of momentum in the moving force, by increasing its velocity in a greater ratio than that of the weight to be moved; we shall now proceed to consider the peculiar actions of what are termed the *three kinds* of lever.

In a lever of the first kind, the fulcrum, or prop on which it works, is placed between the resistance and the moving force. The power gained in such a lever, is in proportion to the comparative distances of the moving force and of the weight from the fulcrum. When the former is twice the distance of the latter, the power is increased two-fold; when it is three times the distance, the power is increased three times, and in arithmetical progression to any extent. In each case, it will be found that the space traversed by the moving force is increased exactly in proportion to the increase of power, its momentum, therefore, remains the same.

When the arms of a lever of the first kind are of equal length, and the weight and the

power act at equal distances from the fulcrum, the pressure on the fulcrum is equal to the sum of the two forces. For instance, if two weights of one pound each, be placed at equal distances from the fulcrum on the opposite arms of a scale beam, they will balance one another, and their united weights will rest on the point of support, which will then bear two pounds.

It might be supposed, on a hasty consideration of the subject, that when the weight and the power are unequal, and the equilibrium is preserved by the superior length of one of the arms of the lever, the pressure on the fulcrum would then also be double the amount of the weight, which is balanced by the smaller force aided by the mechanical power. This, however, is not the case, for the amount of pressure on the fulcrum is in all circumstances merely equal to the sum of the weight and the moving force which keeps it in equilibrium, however small the balancing force may be. The greatest pressure on the fulcrum, from the equilibrium of any given weight, ensues when the weight and the power are at equal distances. The pressure of the weight is then doubled, as was before stated, and greater than that it cannot be; for if the position of the weight or of the power be changed, the equilibrium will be destroyed.

It makes no difference in the principle of the lever, whether the weight be balanced in the manner we have considered it, or whether the resistance it offers be too great for the power to overcome. Suppose a weight of one hundred pounds to be fastened to the shorter arm of a lever, and a force of ten pounds to be exerted on the longer arm, at a distance from the fulcrum five times that of the greater weight. The effect of such an arrangement would be, that the gravitating force of the greater weight would be diminished fifty pounds, and the pressure on the fulcrum would be sixty pounds; the effect being the same as if the weight were fifty pounds, instead of one hundred, and it were balanced by the moving force of ten pounds.

The fulcrum we have hitherto supposed to be an immovable point, on which the lever works, but if we conceive it to be a detached body, offering a resistance of rather less than sixty pounds, the result of the preceding arrangement would be, that the pressure would overcome the resistance of the fulcrum. It would then form a lever of the second kind; the weight of one hundred pounds would become the fulcrum on which the lever worked, and the point which was before considered the

fulcrum, would be the weight, or the resistance to be overcome.

We thus perceive that the distinction between levers of the first and second kind, depends only on the comparative powers of resistance of the two points on which the bar rests; and as unnecessary distinctions only tend to perplex, and to throw additional obscurity over the paths of science, it would be adviseable to consider the first and second kinds of lever as identical. It sometimes happens, indeed, that the fulcrum and the weight are both moved by the power applied at the extremity of a bar, and it then becomes at the same time a lever of the first and second kind, and to call it either one or the other is a merely arbitrary distinction. When a man rows a boat, for instance, the end of the oar which he pulls, the part that rests on and propels the boat, and the other end which acts on the water, are all in motion. In this case the oar is said to act as a lever of the second kind, because the motion given to the water is not taken into consideration; but if the end of the oar instead of being in the water were made to act against the stern of another boat, it might be difficult to determine whether the action of the oar should be considered as that of a lever of the first kind, propelling the other boat; or as a lever of the second kind, propelling the boat in which the rower sits.

It will be observed, from what has been already stated respecting the pressure on the fulcrum, that the resting point between the moving force and the weight, sustains the pressure of the two forces acting at the extremities of the lever; consequently that the mechanical advantage is greater when the weight to be moved is placed between the two ends of the lever, because the power then acts at a greater distance from the fulcrum, and must move through a greater space to raise the weight a given height.

We have only to change the positions of the power and of the weight, in a lever of the second kind, and we then obtain the third kind of lever. The power acts in this lever to a mechanical disadvantage equal to the advantage gained when the positions of the weight and power are reversed; but what is lost in power is gained in *velocity*, and the *momenta*, therefore, remain the same. There seems no reason for considering the change in the relative positions of the weight and the power, as sufficient to constitute a distinct kind of lever. We might with equal propriety constitute a fourth kind of lever, by changing the positions of the weight and the power in a lever of the

first kind. We object, indeed, to all these distinctions as unnecessary and useless. The mechanical advantage of the lever, we have shown, depends on increasing the momentum of any given force by increasing its velocity, and when the power and weight are transposed, velocity is in the same manner acquired by the exertion of greater power.

We shall, in our next, consider the modification of the lever in the wheel and axle, and more particularly in the pulley, respecting which much difference of opinion exists.

CAUSES OF VARIATION IN ATMOSPHERIC PRESSURE.

There are few subjects on which so many various and erroneous opinions are entertained and promulgated as on the changes in the pressure of the atmosphere. Most authors of popular treatises on pneumatics, indeed, either pass over the subject altogether, or, if it be cursorily alluded to, the variation in the height of the mercury in the barometer is ascribed to causes utterly inadequate to produce such an effect, or completely at variance with fact.

One of the most prevalent errors that seems to obtain on this subject is, that the pressure of the atmosphere is affected by the quantity of moisture in the air; the pressure being supposed to be the least when the air contains the greatest quantity of moisture.

It requires very little consideration to dissipate this error, for it is a well-ascertained fact that, during the summer months, when the evaporation from the earth proceeds most rapidly, the air contains much more moisture than in winter, whilst the average height of the barometer is greater during the former than during the latter part of the year. It has been ascertained, by a series of daily observations during one year, that the average quantity of moisture contained in 100 cubic inches of air in January, was .135 grains, and in June the average was .235 grains. The idea that the pressure of the atmosphere is regulated by the quantity of moisture in the air, must, therefore, be altogether abandoned. The apparently greater quantity of moisture in the air when the barometer is low, depends on the condensation of the vapor, owing to change of temperature or to the diminished pressure of the atmosphere, and it is therefore the *effect* and not the *cause* of the variation of the pressure.

Another error, which is perhaps more generally entertained than the one we have noticed, is, that the specific gravity of the air and the pressure of the atmosphere are always corre-

lative; and that whatever causes a diminution in the weight of the surrounding air must necessarily diminish its pressure. Though this is generally the case, it by no means follows as a necessary consequence, for as the pressure of the atmosphere arises from the weight of the whole mass of air above us, which is equal to a stratum five miles high of air of the same density as that near the level of the sea, a change in the weight of any small portion of the circumambient atmosphere cannot produce a perceptible difference in the weight of the aggregate mass. A barometer undergoes no alteration when brought into a heated room, though the air in the room would be considerably lighter than the external air. When immersed in carbonic acid gas the barometer does not rise, though that gas is twice as heavy as common air; nor would the mercury fall if placed inside a balloon filled with hydrogen gas, which is 14 times lighter than the air. The pressure being occasioned by the weight of the mass of air which constitutes the atmosphere, it is not affected by the density of the surrounding medium, which is compressed into a smaller or a greater space, according to the amount of its elastic force.

It is worthy of notice, as an instance of the errors which prevail on this subject, that it is seriously stated in a publication of considerable authority,* as one of the causes why the pressure of the atmosphere is not perceptible on the human frame, that the heat of the body rarifies the air and diminishes the pressure! It would be quite as philosophical to suppose that the pressure of the atmosphere was resisted by our clothes. Mrs. Somerville, in her valuable work on the Connexion of the Physical Sciences, attributes the variation in the barometer entirely to changes of temperature, which by expanding or contracting the air, she supposes must alter the pressure of the atmosphere; and yet the fact is, that the average height of the barometer is greater in summer than in winter. Numerous other instances might be mentioned, to show the contradictory, and frequently absurd notions which are entertained respecting the variations in atmospheric pressure; we shall, however, occupy our remaining space more profitably by endeavoring to establish a theory which will satisfactorily account for all the variations that are experienced.

In searching for the cause of variation in the pressure of the atmosphere, we must look, be-

yond merely local changes, to phenomena that affect the general mass of the circumambient air; and in the motion of the air itself, we find a cause adequate to effect all the changes we witness. The mere mechanical motion of the air, we conceive, may occasion a considerable diminution of its gravitating force; this however is a branch of the inquiry that we will not now pursue, as it is debateable ground, but shall confine ourselves at present to an explanation depending on universally-admitted principles.

It is generally allowed that the winds are produced by partial vacuums in the atmosphere, at some distant points, caused either by the rarefaction of the air by the sun, and its subsequent condensation, or by electrical phenomena. The air rushing to restore the equilibrium which is destroyed by this partial vacuum, produces a current of wind of greater or less force and extent, according to the rapidity and extent of the condensation that has caused the vacuum; and this current will continue to flow until the equilibrium be restored. Now it is quite clear, from the well known expansive properties of air, that if any portion of the pressure which compresses it be removed, it will instantly expand, and its density be diminished. This effect must necessarily ensue when any partial vacuum is produced in the atmosphere. Let us, for instance, suppose the vacuum to be suddenly produced within any given portion of the atmosphere. The air immediately contiguous would instantly expand and rush in to fill the vacant space. This space of expanded air would then be in a state of partial vacuum, compared with the portions of air beyond it; and that again would expand, and cause a comparative vacuum with air still more distant from the original point of condensation. In this manner the expansion and consequent currents of air, would continue though gradually diminishing in force, until the equilibrium was restored. Any condensation of the air, therefore, which produces a current of wind to supply the vacuum, produces at the same time an expansion in the whole volumes of air that are thus put in motion, and this expansion consequently diminishes the pressure of the atmosphere by diminishing the weight of the aggregate mass of air.

Barometrical observations tend strongly to confirm the opinion, that the variations in the pressure of the atmosphere are caused by the wind. Within the tropics, where the wind blows regularly, the mercury in the barometer remains nearly stationary; whilst in our lati-

tude, where we are exposed to constant changes of weather, the range of the barometer exceeds three inches, which indicates a variation in the pressure of the atmosphere equal to 2,000 pounds on every square foot. The mercury in the barometer always falls rapidly before a storm; and though it will sometimes rise during the continuance of a gale of wind, that fact does not militate against our theory, but merely shows that the equilibrium has been restored in the upper strata of the atmosphere; and the rising of the barometer in such circumstances is an almost certain prognostication that the violence of the storm will soon abate.

Our remarks have run to a greater length than we intended, and we have still left several points untouched on which we proposed to comment; we must, however, conclude for the present, but we shall probably renew the subject on some future occasion.

NEW INVENTIONS.

STEAM-ENGINE BOILERS AND CHIMNEYS.

At a recent meeting of the Geological and Polytechnic Society of the West Riding of Yorkshire, Mr. Hartop read the following paper "On the Boilers of Steam-Engines, and the construction of Engine Chimneys:"—On presenting myself before a meeting at Leeds (where the steam-engine is so well understood), with any observations on steam-engine boilers, I feel some apology to be due from me; but I trust that, however trifling the advantage pointed out may be, its application in so wide a field as is here presented will amply repay any attention given to it. I need not go further back than the introduction of the wagon boiler by the late Mr. Watt, which, from its excellent arrangement, was the standard boiler for so many years, during which time a very general opinion prevailed amongst practical men that, whenever the length of the boiler exceeded four times that of its grate (say twenty-five feet), such additional length was useless, as to the quantity of steam produced, although a considerable degree of heat always passed away up the chimney. The cause of this I conceive to be, that the heated air in these flues passes last, and therefore when at its coolest, through the side flues, by which it is brought in contact with water near the surface in the boiler, and therefore at that point where it was the hottest; in consequence of which the boiler, if made very long, might re-impart a portion of its heat to the air in the flues before it passed to the chimney. This point will, however, be better defined on our considering the boiler now in general use in Cornwall. Before doing so, I may, however, be excused for making a few observations on a boiler, which, from its simplicity and strength, is at present becoming a very fashionable one, if I may be allowed the expression—I mean the cylindrical boiler with semi-spherical ends. This, there can be no doubt, is a boiler of great strength, and I believe it was introduced at a time when engines were in use with steam at 200 or 300 lbs. pressure per square inch. This dangerous pressure, I am happy to inform the public, is in modern engines not required, the highest now in use being that for locomotive engines at about 60 lbs. per square inch; the boilers for which are so constructed as to render danger to the public very improbable. In the expansive engines of Cornwall, the steam used rarely exceeds 50 lbs. per

* Rev's Encyclopedia, article "Atmosphere."

square inch, and in the high-pressure engines of the best makers, the steam in use is little more than 30 lbs. per square inch, from which it will be seen that great strength in a boiler is not now so requisite as formerly, and particularly when it is considered that the same accidents will happen to the strongest as well as to the weakest boilers, from similar causes, and that when they happen to a strong one, the explosion is the more terrific in the direct proportion as the boiler is the stronger. We should therefore avoid the cause of these dreadful accidents rather than strengthen the boilers. Now there is one very great disadvantage in the cylindrical boilers, *viz.*, that the incrustation will all collect in that portion of the boiler which is nearest the fire, and, being a non-conductor of heat, will expose that portion of the boiler which lies between the fire and such incrustation to be burnt away. The argument in favor of this boiler, derived "from the ease with which it may be repaired," is therefore more than done away with by its so often standing in need of that repair, which in well-constructed boilers will not be required for the first twelve or fourteen years. The next and last boiler I shall at present occupy your time in considering, is that of the Cornish boiler. It consists of an outer cylindrical case, having an inner tube passing through its whole length, in one end of which the fire-bar or grate is placed, by which arrangement the heated air and flame is made to pass nearest the surface of the water in the boiler, where both air and water are the hottest; the former then returns through the side flues, and descending under the grate, passes under the boiler last, where both the heated air and water are the coolest, so that in a boiler of sufficient length the whole heat given out by the fuel may, under this arrangement of the flues, be imparted to the water in the boiler, and it is consequently found in Cornwall that they may be used to advantage to the extent of fifty feet in length. I am induced to appear before you on this subject, in consequence of my not having found these points hinted at either in the very excellent practical work on steam-engine boilers by Mr. Armstrong, of Manchester, or elsewhere. I may here also mention the very great importance it is to the owners of steam-engines, that the iron selected for these boilers should be of a proper quality for that purpose, for I have known many instances of the bottoms of boilers being entirely worn out in eighteen months, instead of lasting nearly as many years, the kind of boilers in both instances being in every respect the same, from which circumstance there can be no doubt that it is on the real stamina of the iron from which the boilers are made that their goodness or good-for-nothingness depends. Connected with this subject is that of the chimney, which is very often carried to the height of 160 and 200 feet, and consequently made so small in the internal flue at the top, as to cause the smoke to pass off with some difficulty. Having about eighteen years ago built one 110 feet high, with its internal flue wider at the top than at the bottom, it was found in practice to answer so well, that on applying fourteen puddling and other furnaces to it, the draft up to that point seemed rather to be improved with each additional furnace, than impeded. I now find the practice becoming a general one in Scotland and Lancashire, which I attribute to my having mentioned the circumstance from time to time to my friends; and I do not hesitate to say, that in good situations, 80 feet will be found an ample height for the largest engines, and 100 feet in situations less favorable.

NEWLY INVENTED HOWITZER.

The *National de l'Ouest* gives the following account of a trial of a new light howitzer for field service:—"The piece is of 12lb. calibre, weighing only 100 kilogrammes (200lbs.), so that it may be carried over mountains on the back of a mule. It throws a shell, which bursts on reaching the enemy, and contains 75 balls, scattering its splinters to an extent of 600 yards; and the balls are directed with great precision, penetrating boards of considerable

thickness. It may be used with the greatest effect in the most mountainous parts of Algeria."

NEW THRASHING MACHINE.

At the recent Isle of Wight agricultural meeting, a thrashing machine, worked by two strong ledges, and capable of thrashing a load of corn per day, was exhibited by that talented and ingenious mechanist, Mr. Barnabas Urry, jun., the inventor. The little machine excited considerable curiosity amongst the farmers, and thrashed out a sheaf of corn per minute, on the spot, with the greatest regularity, and seemed most admirably adapted for a small farm. The price (about £14) will enable small occupiers to avail themselves of its assistance.—*Hampshire Telegraph.*

NEW MACHINE FOR DIGGING POTATOES.

We understand that Mr. Thomas Dalziel, Holm of Drumlanrig, has invented a machine for digging potatoes, and forwarded a model of it to the Highland and Agricultural Society, Edinburgh. Should the anticipations of the inventor be realised, a complete revolution will shortly be effected in that department of agriculture.—*Dumfries Times.*

NEW MODE OF BOAT BUILDING.

It is stated to be the intention of the Admiralty, to confer a gratuity of £300 on Mr. Johns, boat-builder, of Devonport dockyard, for the great improvement he has made in his diagonal mode of boat-building; which combines durability with every other good quality desirable in boats, besides a very great reduction of expense, compared with the old method. The boat-building company in the Thames compute a saving of 30 per cent. by building in this way, and have extended it to steamers.—*Naval and Military Gazette.*

RAILWAY SYSTEM OF GREAT BRITAIN.

(Continued from our last.)

In our last we stopped in the middle, and now take up the remainder of

1836.

THE BIRMINGHAM AND GLOUCESTER RAILWAY, from town of Birmingham to town of Gloucester. Length, 59 miles.—Capital, £945,000.—Use, conveyance of goods and passengers.

THE AYLESBURY RAILWAY, from town of Aylesbury, county of Buckingham, to junction with London and Birmingham Railway, near village of Cheddington, same county. Length, 7 miles.—Capital, £80,000. [This, and all subsequent lines that we do not specify, are for purposes of general traffic.]

THE CHELTEHAM AND GREAT WESTERN UNION RAILWAY, from Cheltenham and Gloucester, to union with Great Western Railway near Swindon, with branch to Cirencester. Length, 42½ miles. Capital, £750,000.

THE TAFF VALE RAILWAY, from Merthyr Tydfil, to Cardiff, South Wales. Length, 40 miles.—Capital, £800,000.—Use, chiefly conveyance of minerals and merchandise.

THE LONDON GRAND JUNCTION RAILWAY, from London and Birmingham Railway, at or near Regent's Canal, parish of St. Pancras, Middlesex, to Skinner-street, City of London. Length, 2 miles. Capital, £600,000.

THE BIRMINGHAM, BRISTOL, AND THAMES JUNCTION RAILWAY, from basin of Kensington canal, at Kensington, to join London and Birmingham and Great Western Railways at or near Holsden-green, county of Middlesex. Length, 3 miles.—Capital, £150,000.

THE LONDON AND BLACKWALL COMMERCIAL RAILWAY, from the Minories to Blackwall. Length, 3½ miles.—Capital, £100,000.—Use, chiefly conveyance of merchandise to and from docks at Blackwall.

THE SOUTH-EASTERN RAILWAY, from the London and Croydon Railway to Dover. Length, 77 miles. Capital, £1,400,000.

THE LONDON AND CAMBRIDGE RAILWAY, from London to Cambridge, with a view to its future extension to northern and eastern counties. Length, 53½ miles. Capital, £1,200,000.

THE EASTERN COUNTIES RAILWAY, from London to Norwich and Yarmouth, by Romford, Chelmsford, Colchester, and Ipswich. Length, 126½ miles.—Capital, £1,500,000.

THE YORK AND ALTOFTS RAILWAY, from city of York to township of Altofts, in West Riding of Yorkshire. Length, 27 miles.—Capital, £370,000.

THE GREAT NORTH OF ENGLAND RAILWAY, from near the river Tyne, to or near the river Tees, county of Durham. Length, 76 miles.—Capital, £660,000.

THE PRESTON AND LONGRIDGE RAILWAY, from town of Preston to that of Longridge, Lancashire. Length, not stated.—Capital, £30,000.

THE EDINBURGH, LEITH, AND NEWHAVEN RAILWAY, from city of Edinburgh, to Firth of Forth at Newhaven and Trinity, by town of Leith. Length, 2½ miles.—Capital, £100,000.

THE DUNDEE AND ARBOATH RAILWAY, from town of Dundee to town of Arbroath, in Forfarshire. Length, 17 miles.—Capital, £100,000.

THE ARBOATH AND FORFAR RAILWAY, from town of Arbroath to town of Forfar, both in county of latter name. Length and Capital not stated.

In this session also were passed two Railway Acts for Ireland,—one, for running a line between Dublin and Drogheda; and the other, for a line between the towns of Armagh and Belfast. The Length of the first, is 32 miles.—Capital, £600,000. The Length and Capital of the second we do not find given.

1837.

THE CHESTER AND CREWE RAILWAY, from city of Chester, to union with Grand Junction Railway, near Crewe Hall, county of Leicester. Length, 21 miles.—Capital, £240,000.

THE MANCHESTER AND BIRMINGHAM RAILWAY, from town of Manchester to union with Grand Junction Railway in parish of Chesbey, county of Stafford; with various branches. Length, 45 miles.—Capital, £2,100,000.

THE CLARENCE AND HARTLEPOOL UNION RAILWAY, for connecting the Great North of England, Clarence, and Hartlepool lines, in county of Durham. Length, nearly 8 miles.—Capital, £51,000.

THE HOUGHTON-LE-SPRING BRANCH RAILWAY, to connect Houghton-le-Spring with Durham Junction Line. Length, about 5 miles.—Capital, £63,530.

THE MARYPORT AND CARLISLE RAILWAY, from town and harbour of Maryport, to city of Carlisle. Length, 28 miles.—Capital, £180,000.

THE CHESTER AND BIRKENHEAD RAILWAY, from south bank of river Mersey, near Liverpool, to Brook-street, parish of St. Oswald, Chester. Length, nearly 15 miles.—Capital, £370,000.

THE LONDON AND BRIGHTON RAILWAY, from London and Croydon Railway direct to Brighton, with branches to Reigate, Lewes, Newhaven, Shoreham, &c. Length of whole, 73 miles.—Capital, £1,200,000.

THE BOLTON AND PRESTON RAILWAY, from Bolton-le-Moors to Preston, Lancashire. Length, with branches, 20 miles.—Capital, £349,500.

THE BISHOP AUCKLAND AND WEARDALE RAILWAY, from near Black Boy branch of Stockton and Darlington Railway, in township of St. Andrew Auckland, to or near to Witton Park Colliery, all in county Durham. Length, with branches, 20½ miles. Capital, £162,934.

THE LANCASTER AND PRESTON RAILWAY, from town of Lancaster to that of Preston, in county of Lancaster. Length, 20½ miles.—Capital, £250,000.

THE SHEFFIELD AND MANCHESTER RAILWAY, from town of Manchester to that of Sheffield, with branch to Ashton-under-Lyne and Stalybridge. Length, with branches, 43½ miles.—Capital, £700,000.

THE GLASGOW, PAISLEY, KILMARNOCK, AND AYR RAILWAY, from city of Glasgow to town of Ayr, touching at, or having branches to, the other places named. Length, 40 miles.—Capital, £600,000.

THE GLASGOW, PAISLEY, AND GREENOCK RAILWAY, from city of Glasgow to town of Greenock, through towns of Paisley, Port-Glasgow, &c. Length,

22½ miles.—Capital, £400,000. This railway excites much interest, from the circumstance that, when finished, it will compete with the now vastly improved and efficient system of steam navigation on the river Clyde. The result, after the operation of one or two years, will be important, as determining many points applicable to like cases in other quarters.

In this session, as in the former, Ireland participated in the legislation connected with railways. Three Acts were passed authorising the formation of lines in that country,—one from Dublin to city of Kilkenny, to be called the GREAT LEINSTER AND MUNSTER RAILWAY. Length, 73½ miles.—Capital, £800,000. The second, from city of Cork to town of Passage. Length, 6½ miles.—Capital, £200,000. And the third, from Dundalk, in county Louth, to town of Ballybay, in county Monaghan. Length, 24 miles.—Capital, £100,000.

The foregoing are all the Acts for new railways of public general importance that passed in 1837; but in that year of feverish speculation, the gross number passed of all kinds amounted to no less than forty-two, those of them not above enumerated being for alterations or extensions of previous lines, borrowing additional sums of money, &c. &c. Besides the 42 acts passed, 27 were rejected, embracing projects for executing 794 miles of additional lines. The total of those passed, involved the formation of 1,233 miles of new road, and the outlay of about £20,000,000 of capital, while for the previous year (1836), the length of new road undertaken to be formed was about 1,000 miles, and the amount of capital to be raised upwards of £15,500,000! Total for the two years, 2,233 miles of road, and £35,500,000 of money! The nation felt astonished, the legislature became alarmed, and steps, to be subsequently noticed, were taken by the latter to put some check upon the excitement;—but just at the moment that affairs stood in this interesting position, the monetary crisis in America and this country occurred, and at once cooled the fever to a degree, tenfold beyond that to which any efforts of the legislature could have reached.

On account of this sudden and severe check, only one Act for making a new line of railway was passed in the following session of 1838; although several others, to the amount of 16, were brought forward, and carried, for altering, amending, adding more branches to, and raising additional sums for the execution of those formerly planned and authorised. 1838.

The one Act above mentioned, obtained for constructing new railway this session, was that which sanctioned

THE EDINBURGH AND GLASGOW RAILWAY, from city of Edinburgh to city of Glasgow, with branch to intermediate town of Falkirk, &c. Length, 46 miles.—Capital, £900,000. This, like the Newcastle and Carlisle Railway, mentioned under date of 1829, will open a direct communication between the eastern and western sides of the Island; besides approximating the two great cities of Edinburgh and Glasgow so closely, as to make them almost one. It is an interesting circumstance also, demanding additional remark, that these two important lines run each not very wide of the respective tracks pursued by the ancient Roman walls of Adrian and Severus; the one built between the estuaries of the Tyne and Solway, and the other between the firths of Forth and Clyde;—a striking testimony to the fine military genius of the Romans, from the enlightened civil science of the 19th century!

1839.

The railway Acts passed this session amounted in number to 26; but the whole of them were of a subordinate description—for altering, amending, adding new branches to, extending lengths, and raising capitals of those for which acts were procured in former years. It could serve no useful purpose to enumerate them, as they will necessarily be absorbed in the details of the lines to which they are subordinate, when those lines have been so far perfectly executed, as to render it possible to bring their details in a conclusive general shape before the public.

This much only it is worth while to mention,—

that the number of railway acts of every description, principal and subordinate, passed in this country from first to last,—that is, from 1801 to 1839, both inclusive,—is 275; and that the amount of capital allowed to be raised under these, exceeds sixty millions sterling! Yet, vast as these two aggregates are, they perhaps do not bear a proportion of more than one third to the amount of each that may be anticipated, when the railway system has been developed in the three kingdoms to the extent of which it is susceptible. Nearly one half of the counties of England and Wales, are yet without any intermediate local railway communication; at least three-fourths of those in Scotland are in the same predicament; while in Ireland, no railway is yet in operation, save the short one from Dublin city to Kingstown harbour, described under date of 1831; and when these striking, yet incontrovertible facts are duly considered, our comparative estimate of the present and future amount of railway extension, must be allowed to be quite within bounds. The friends of the continued progress of this great system, are therefore correct in their general views and calculations regarding it. The respect in which they show most tendency to err, is the too great enthusiasm with which, if possible, they would push it out almost at once to its ultimate limits. This cannot be done without producing great and most injurious derangement, in all our old established systems of finance, industrial occupation, and public intercourse; and therefore has the legislature, of late, very wisely evinced a disposition to keep such enthusiasm within due bounds, by giving scope to it only to the extent to which it can healthily operate, both for its own permanence, and the gradual adjustment to it of those important national interests, on which it in the meanwhile operates with so disturbing an influence.

But to these topics we shall have a better opportunity of advertizing, at a future stage of our progress.

(To be Continued.)

VARIETIES.

English Thread in France.—The following is the outline of M. Bresson's motion in the French Chamber on the importation of English thread:—"Art. 1. Threads of flax or hemp simple, No. 1 to 7,000 metres, 35 centimes per half kilogramme. No. 8 to 12,000 metres, 70c. No. 13 to 20,000 metres, 1f. No. 21,000 metres and upwards, 1f. 50c. White and *mi-blanc simples*, one-third higher; dyed and twisted of all descriptions, two-thirds more. Unbleached cloths of 8 threads in 5 millimetres, 50c.; of 8 to 11 inclusively, 1f.; 12 to 15, 1f. 60c.; 16 to 17, 2f. 20c.; 18 to 19, 3f. 10c.; 20 and upwards, 4f. 50c. Bleached, half-bleached, and printed cloths, three-fourths more; dyed cloths, one-half more. Tissues of hemp and flax two-thirds higher than the cloths, and damask table-linen double the before-mentioned duties. Art. 2. From the year 1845 these duties, as regards threads and tissues, to be reduced 10 per cent. annually, until they shall have been lowered two-thirds."

There are now published in the Austrian empire 36 political journals, viz.:—2 at Vienna, 2 at Agram, 2 at Pesth, 2 at Baden, 2 at Presburg, 2 at Limburg, 2 at Prague, 2 at Venice, 1 at Innspruck, 1 at Brunn, 1 at Gratz, 1 at Klangenfurth, 1 at Leybach, 1 at Lintz, 1 at Salzburg, 1 at Hermanstadt, 1 at Troppau, 1 at Como, 1 at Milan, 1 at Cremona, 1 at Mantua, 1 at Pavia, 1 at Verona, 1 at Sarza, 1 at Trieste, 1 at Closenburg, 1 at Cronstadt, and 1 at Roveredo. 16 of these journals are published in the German language; 11 in Italian; 1 in Illyrian; 5 in Hungarian; 1 in Polish; 1 in Bohemian; and 1 in Wallachian. There are 96 non-political journals, of which 24 are published at Vienna, 27 at Milan, and 11 at Prague.

On Monday, the 10th inst., a general assembly of the Academicians of the Royal Academy of Arts

was held at their apartments in Trafalgar-square, when Daniel Maciße, William Frederick Witherington, and Solomon Alexander Hart, Esqrs., were duly elected Royal academicians, in the room of Sir William Beechey, Chas. Rossi, and William Wilkins, Esqrs., deceased.

Sympathy or Influence of Pendulums on each other.

—It is now nearly a century since it was known, that when two clocks are in action upon the same shelf, they will disturb each other; that the pendulum of the one will stop that of the other; and that the pendulum that was stopped, will, after a while, resume its vibrations, and, in its turn, stop that of the other clock. When two clocks are placed near one another, in cases very slightly fixed, or when they stand on the boards of a floor, it has been long known that they will affect, a little, each other's pendulum. Mr. Ellicott observed, that two clocks resting against the same rail, which agreed to a second for several days, varied one minute thirty-six seconds in twenty-four hours when separated. The slower, having a longer pendulum, set the other in motion in 16½ minutes, and stopped itself in 36 two-third minutes.—*Practical Engineer's Pocket Guide.*

Berlin.—At the last exhibition in this city, there were a thousand pictures exhibited, besides one hundred works of sculpture.

Frankfort.—Copies of the engravings from the Institute of Staedel are about to be offered for sale. They amount to 3,500 from the most celebrated schools; about 1,000 are from the Flemish school.

Munich.—A third volume of poetry by King Louis of Bavaria has just been published; and the two first volumes have reached a third edition.

Stuttgart.—An interesting work has just been published here. It is the History of Painting upon Glass in Germany, the Low Countries, France, England, Switzerland, Italy, and Spain, from its first origin to the present day. This curious volume is from the pen of M. A. Gessert, and is published by Cotta.

Rome.—The beautiful palace built by Sextus V., near the church of St. John Port-Lat., is destined to become a museum of antiquities. The rich mosaics from the papal cabinet will occupy the ground floor. It will contain also models of the Elgin marbles in plaster of Paris, and of the *Aeginetes* from the Gallery of Sculpture at Munich.

REPORTS OF SCIENTIFIC MEETINGS

URANIAN SOCIETY.

The Inquiry.—“Are any visible changes found to take place in the earth's atmosphere during the aspects of Uranus?” engaged the attention of the members present.—Feb. 4.—W. H. White, Esq. Vice-President, in the chair.

The chairman commenced the discussion by stating the effects ascribed to the aspects of Uranus, which are said to be downfall with a general decrease of temperature; or gales of wind and stormy weather.

As is usual in the investigation of the hypothesis of astro-meteorology, recourse was made to meteorological observations, of which several tables were sent from Sheffield, but these were of so garbled a nature, having evidently been selected for the occasion, that the members unanimously rejected them.

Registers of observations made at London and Cheltenham, during the year 1839, were produced, but such was the discordance between them and the ascribed influences, that as far as they extended they gave a decided negative to the question.

The members consequently left the question as they found it—an imaginary speculation—but shorn of its probability.

The following paper from the Hon. Miss Burton

was read, and the meeting adjourned to the third proximo.

REMARKS ON THE THEORY OF UNIVERSAL ABSORPTION OF PLANETARY INFLUENCE BY SOLAR AGENCY.

Since it is granted, that vertical solar action very materially diminishes planetary influence near the equator, if the fact asserted by the learned objector were established, namely, that "planetary action progressed at the same angles of obliquity maintained by solar action throughout both hemispheres," it would necessarily follow, that a proportional counteraction must equally progress, causing a diminution of planetary influence, by solar energy, equal in angular acuteness, throughout both hemispheres, to the diminution taking place near the equator, and hence that the action of planetary influence would, virtually, be nullified throughout the planet. But the learned objector must please to remark, that no similar uniformity of progressive angular obliquity is maintained between solar and planetary agencies throughout our hemispheres.

On the contrary, while gradual increase of solar ray obliquity permanently subtends from the equator toward each of the poles, in consequence of the sun's comparative immovability, the annual courses around the Sun, of the Earth, and all the other planets, induce innumerable relative changes of position amongst these bodies; each relative position amongst them introducing the action of its concomitant angle of obliquity upon some portion or other of the Earth's hemispheres. Hence, the angular actions of two distinct agencies affect every spot throughout the Earth; the first being the angular action of solar progressive obliquity consequent on the Sun's comparative immovability; the second being the angular action of planetary fluctuating obliquities, consequent on the locomotive nature of each planet; the permanency of the first, or solar action, maintaining the periodical returns of the seasons, and the fluctuations of the second, or planetary action, materially operating towards vicissitudes in those seasons.

Thus, so far from a progressive uniformity of angular action subsisting between solar and planetary obliquities, no two successive moments or localities present similarity in their relative angles. In fact, nothing more dissimilar exists than the angles of solar and planetary influences upon the Earth's globe; although nothing can exceed the angular precision of their respective agencies thereupon, whether operating distinctly or in combination, both being governed by one law, namely, "the more direct the position of a celestial body towards any rotatory portion of the Earth, the stronger the action of that celestial body upon that rotatory portion." Hence, although vertical energy may powerfully diminish the agency of any planet during that planet's progress within its influence, yet, as the spiral courses of the Earth and the other planets comprise the breadth of the Zodiac in their annual progresses along the ecliptic, every planet must frequently travel, not merely beyond range of vertical counteraction, but in positions far more direct towards the major portion of the Earth, than is exhibited by the angle of solar progressive obliquity during the same period; and, in many instances, every planet must travel, in turn, in positions of positive angular directness towards some segment of the Earth's globe, and each planet, thus travelling, must obtain a preponderating influence over such globular segment, proportioned to the angular directness in position of the planet.

Here we must observe, that as vertical action considerably counteracts planetary agency near the equator, and as the angles of planetary obliquity augment most sensibly towards the poles, it appears consonant to reason to presume (what is demonstrated by fact), namely, that planetary agency is most influential within the temperate regions; those regions, comprising as they do, a globular medium, equally removed from equatorial solar counteraction, and from the acuteness of planetary obliquity towards the poles; and their position,

rendering them especially prone to reception of influence from every planet in the Zodiac, whose their medium rotatory velocity of 700 miles an hour seems calculated for the accumulation of that influence; since, such is the precision of the celestial machinery that, for the co-operation of the Earth's planet with the rest of the solar system, it is necessary that throughout every inch of her globe, the closest equilibrium should be maintained amongst the following agencies: namely, the action of the Sun upon each rotatory point (as computed by the angle of the Sun's progressive obliquity thereunto); the specific actions of each of the planets upon each rotatory point (as computed by their respective angles of fluctuating obliquities thereunto); and the express rotatory velocity of each rotatory point, thus individually acted upon. An equilibrium, existing, not for any one moment of any given time, but throughout every moment of all time; the calculation of which the present ignorance of man cannot compass, but the invincibility of whose equipoise must be borne in mind, in attempting any just appreciation of nature's operations.

Cheltenham, 30th Jan. 1840. F. B. BURTON.

EXTRACTS FROM MR. HAYNES' NEW PLAY,—MARY STUART.

We have already spoken of the general character of this play, but without giving any extracts. We therefore select the following, as being the best specimens we can find of its literary merits. On its acting merits, the whole of the *marrow* being monopolised by one actor, we care to make no further remarks:—

One of the most striking passages in the play is *Ruthven's* description of his dream, at the conclusion of the 4th Act. It is narrated while in a paroxysm of grief for the death of his daughter:—

Ruthven.—I had a dream last night that told me all.
Morton.—Dismiss, forget it now—his mind's unsettled.

(Aside.)
Ruthven.—Methought I saw the lonely power of death, With a pale crown, sitting upon a throne Of ruin. Though he had more subjects than The living world contains, they were to him As nothing, for his attributes were nothing, And his strange life—the life of death—was nothing. Methought I saw the lonely potentate Upon his breathless bosom lay his hand, And then a thrill ran through my frame which told me I had passed under his dominion.

Morton.—It shaked your soul too much to think of it.
Ruthven.—Next came the horrid chill of night and darkness,

That, like an ugly monster, swallow'd up The shape of things—motion was at an end And form—the winds were hushed, the sea was mute, The sky was voiceless, and the earth itself As silent as the moon. I strove to shake The stupor from my senses, and at length Burst the fell bondage of the grisly king. I woke, but, oh, to what reality! Let me not think on't! No, she's gone, and fate Has done its worst—there's comfort in that worst. Proud scorn and fierce defiance are the passions It sends to fight with lamentation.

There is no terror for me in things Most terrible. I love to see the storm Shake from its fiery lap the seeds of death Upon the wind, and rust from Heaven to Hell—I love to see the high waves dash the orbs Of light, and feel the earth shake under me, When ruin pelt's it with the driving blast, And plays the devil with the hurricane.

Morton.—Oh, come, my friend.
Ruthven.—Lead where you will, I care not.

Music being the chief accomplishment of *Rizzio*, it is thus described by *Lady Catherine*:—

Catherine.—Oh! had you heard him, too, You would have said he was of Orpheus sprung, Or taught his art by Syrens, or had traced The mermaid's plaint at sea, and caught it on His harp from the wild wave, or, bolder still, Had mounted to the spheric harmonies. And, where the rolling planets hymn to Heaven, Touched the wrapt choir!

In another scene, the same art is complimented by the *Queen* while *Rizzio* performs on the harp:—

Argyll.—Would you not augur, from his bended brow Leaning on thought, he loved ambitiously?

And so he does. But mark him when he strikes The magic string and lifts his eyes to Heaven, As if he looked at inspiration!

Catherine.—Oh! there's a melody even in the pause And stoppage of his song, for fancy fills The resting place more sweet than other's music.

[Bold music is heard.]
Queen.—Hark! Hark! the echoes ring. Is it the soul Of genius, or the storm that wakes that note, Or Heaven or earth that tunes it to the swell Of mighty winds and tempests?

[Soft music.]
Hark, again!
The minstrel hangs his head in melancholy; And now the zephyrs steal among the strings, To touch his hand and die. It was not falsehood That bade the poet fancy stones to move; For there's a spirit in creation—

A mind in matter captivate to song. The very comet, in his random sphere, Obeys it voice and smooths its bristling fires To listen while the golden planets sing. The smallest clod of earth does, in its fair Proportion to the wheeling worlds above,

Sustain the universal harmony, And follow nature in her heavenly round. 'Twas therefore truth, not falsehood, told how trees And stones could move when music tried her skill; And thus the poet's thought is justified.

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And stones could move when music tried her skill;

And thus the poet's thought is justified.

After the death of *Ruthven's daughter*, an apprehension is expressed by some of the conspirators that his grief may interfere with his fortitude when they proceed to the sacrifice of *Rizzio*. *Ruthven* spurns and answers the imputation by the following story:—

Ruthven.—You've heard the story of a lioness That saw her young whelp by the hunter spear'd One glorious day of chase. Furious she sprang From the thick jungle at the multitude, And made more havoc in their ranks than wild fire In brambles, till she fell; nor quailed she then, For when she fell—twas at the bleeding side Of her own offspring stretch'd in death. Close, close As mothers lie, she lay to't, stroked the skin By hunters rudely torn, and with a lick, Which was her kiss, pierced by a hundred wounds, Amidst a thousand shouts, she died lamenting The baby brute that from her fearful breast Drew milk and tenderness; such as that mother Am I a father—such the grief I feel. Come follow me and you shall own its greatness.

The scene in which *Rizzio* taunts his accusers, contains the following passages:—

Douglas.—It asks no skill To weigh the credit of a base Italian.
Rizzio.—But wherefore base? Explain! Was Rome of old A land of baseness? were her patriots base? Were the great Caesars knaves, and Cicero, Was he a cheat, and Horace a buffoon? These were your base Italians.

Douglas.—Nay, you speak From books: I spoke of living men.
Rizzio.—And I Of men who live for ever; men whose names Were like their souls, immortal; men who stood Upon the mountain top of the whole world, The very Ida of the intellect. But look again, and take a later day, When Italy and base Italians aaved The wreck of learning, and the fountain springs Of liberty and glory from the Goth. What can you show to match that matchless claim? The glorious east, that in its bosom wears The morning like a jewel, never shone So bright as when the gates of Italy Opened to let the flood of science out Upon the world, and gilded all the sphere. You talk of base Italians! Learn to read, And you'll talk otherwise.

Darnley.—The Queen may choose To hear this boastful language; but it shall not Turn us from Justice, in whose name, and by The might and power of whose authority, We banish you from Scotland.

Queen.—How! my lord!

Darnley.—Rizzio is banished from this land for ever, Or I am King no more.

Queen.—O! be a King— Put on the real Crown, the kingly mind, And spurn injustice as the antipathy Of your proud office, which is outraged by The very sound of the name.

In the same scene, when the *Queen* is charged openly by *Darnley* with a criminal passion for *Rizzio*, she thus replies:—

Queen.—Is this a horrid dream, or a more horrid Reality? Am I the Queen of Scots, Or, as I seem to be, some helpless wretch Insulted by some high barbarian? No, Sir; I'm still the Queen, and in the name Of my prerogative I here reverse Your sentence, and deliver David Rizzio From your injustice. Rizzio you are free! Free as the king himself to live in Scotland.

Rizzio.—I knew not what to say. My brain! my brain! Queen.—Yet hold! There's yet one chance to save this breach.

Recall the hasty word your passion spoke; Revoke the sentence by your own decree, And I, who set the crown upon your head, Will make it grow with greatness.

Darnley.—Tis in vain, I stand myself upon my right—you talk to marble. Queen.—I talk to harder and coarser stone, That never could be hewn into man's image—The rock, the impenetrable rock. Farewell! From this time forth our fates are separate.

THE CRITICS CRITICISED.

La critique est aisée, et l'art est difficile, says Desouches: and, as a fair consequence, we find more critics than artists; which is as much as to say, there is an abundance of hands ready to destroy, but few indeed to build up.

M. Wiertz has opened the lists for a contest, which has already made almost as much noise as his great picture of "the Greeks and Trojans disputing for the dead body of Patroclus." His edict hath gone forth, "Too long have the critics been the self-appointed judges of artists: henceforth let the artists in their turn bring the critics to judgment."

This is a new idea, and a happy one, too, forsooth! for artists will find no difficulty in recognising each other in the field of literature, as littérateurs recognise their "familars" in the "Fine" Art.

You must know that I, egomet, I myself, have been a critic in my younger days; but at least I have the satisfaction of knowing that I never willingly or wantonly did injury to any one. I always kept in view three principal points: 1st. Never to make a single observation on anything which was really bad: it is a proposition of universal assent, that what is *really bad* carries in itself the principles of its own destruction, and perishes quickly. Why, then, should I be its executioner? 2dly. To point out to the public the beauties of any particular work, by teaching that public how to show indulgence to its faults; always supposing that the faults were not more prominent than the beauties. It was a saying of Michael Angelo, that a work of art in which the merits are more numerous than the faults, may be styled a fine work. This axiom is not kept sufficiently in mind now-a-days.

Thirdly. To take into especial consideration the peculiar conception of the artist himself, his individual ideas, and the circumstances under which his works were produced. Every artist has a right to demand this.

You may, perhaps, have met with some of those critics who find fault with Rubens' grand picture of Saint Liévin, * from a part of the skull being omitted; but place the picture at a distance of fifty feet, as the artist himself placed it, and the skull is perfect.

I once reckoned in the circle of my acquaintance, at Paris, a well known littérateur (who frequently reviewed the salons d'exposition of the capital,) whose practice it was never to speak decidedly on any picture without a personal introduction to the artist himself. By this means, he became acquainted with points which otherwise had been entirely overlooked; and he frankly acknowledged that a criticism of the details of a picture could never be made with accurate judgment, without a communication à l'oreille with the painter. My friend would add: "the usual written critiques of the day were useful for little less than to dazzle the admiring eyes of the million with brilliant composition, the million so fond of little *mechanicités*—so pleased with destruction—the million which bursts into laughter at the crash of broken crockery—a tripped-up old lady—or a ragged cout:" a spark of the devil with difficulty repressed.

And it is because I agree with my old friend, that I answer the challenge of M. Wiertz; with the

sincere desire, however, of seeing more able champions than myself enter into the lists.

Commentators have been compared to the *douaniers* who affix lead to gauze and lace; and critics to those who do nothing themselves, and prevent others from doing any thing. These comparisons are often too just. It is to be observed, moreover, that your great critics always appear at the point of *negation*, if I may be allowed the expression, that is to say, at those periods when genius is at its lowest ebb. Contemporary critics, who lash themselves into savage anger against the talent which blinds them, are invariably overwhelmed by the weight of the giant they attack. Where are now your Zolius, your Bavius, Mœvius, and Pantouillet?

(To be Concluded in our next.)

THE THEATRES.

"See that the players be well used."—*Hamlet*.
"Nothing extenuate, nor set down aught in malice."—*Othello*.

COVENT GARDEN.—The production of Mr. Leigh HUNT's new play, *A Legend of Florence*, attracted a numerous and elegant audience on Friday night. The author seems to have cared nothing for the incidents of his piece not being new,—trusting solely to the interest produced by them in their representation on the stage. The plot is simple, and may be told in few words.

Francesco Agolanti (MOORE), and *Antonio Rondinelli* (ANDERSON), before the commencement of the drama, have been rivals for the hand of *Genevra* (Miss Ellen TREE); *Francesco* (who is rich, while *Antonio* is comparatively poor) is successful, but is utterly unworthy his success. He is of a plausible exterior, and of a smooth tongue, but a domestic tyrant; he is jealous and malignant, making his young, delicate, and beautiful wife miserable, while he endeavours to keep up appearances to the world, and would pass for a kind and courteous husband. *Antonio*, who is a romantic young man, has given him some cause for jealousy, by writing to *Genevra* epistles full of his ancient and pure affection, which she has, of course, returned unopened, and one of which falls into the hands of *Francesco*, at the opening of the play. *Genevra*'s health gradually fails her, and in time it becomes notorious that she is suffering from the cruelty of her husband. *Antonio* comes to the resolution of seeking an interview with *Francesco* (which he does by letter), in order to remonstrate with him on his treatment of *Genevra*. This interview takes place in the third act, and it should be noticed that, in the scene immediately preceding, *Francesco* has left *Genevra* in a swoon, produced by his unjust reproaches and severity. *Antonio* and *Francesco* meet and quarrel, and, drawing their swords, are on the point of mortal combat, when news is brought that *Genevra* is dead, never having recovered from the fit her husband had occasioned. In the commencement of the fourth act, we hear of her funeral, but as some of her friends suspect her death to be only a trance, a page is sent to watch her waking, but finds that she has disappeared from the tomb. *Genevra*, "in her grave-clothes," seeks the dwelling of her husband, who imagining that it is the spirit of his injured wife, in terror shuts the door against her. She fails in obtaining shelter with her mother, and, as a last resource, flies to the house where *Antonio* resides with his mother, and where *Genevra* remains some days before *Francesco* learns what has occurred. (This scene is very farcical indeed.) He puts on a show of sorrow and contrition, and hastens to induce *Genevra* to return with him. She has declared that she would never re-enter his doors, but recollecting her duty as a wife, and relying on *Francesco*'s apparent repentance, she determines, after a long interview with *Antonio*, to abandon him and return to *Francesco*. Just as she is quitting the scene with her husband, his tone of insulting triumph over

Antonio, and the warnings and remonstrances of friends who are present, particularly *Cesare Colonna* (G. VANDENHOFF), revive her apprehensions of farther sufferings and cruelty, and she shrinks from her husband's grasp, flying to the protecting arms of *Antonio*; *Francesco* draws his sword, and rushes forward to seize her, but is intercepted by the weapon of *Cesare Colonna*, and killed, or rather butchered, on the spot. The whole weight of the acting, rested on Moore and Miss Ellen TREE; the formerly fully verified our prediction of him. He was energetic, and quite alive to the spirit of the character, which he acted exceedingly well, revolting though it was. The part of *Genevra* was sustained by Ellen TREE in a manner nothing short of excellence. The patient victim of a brutal husband, she bore all without a murmur, and afforded us a perfect picture of what a woman should be, though, alas, what every woman is not! The dialogue of the play is harmonious, and very far from common-place. It however possesses all the peculiar quaintnesses of the author, whose writings are well known. As we are nothing if not critical, we cannot but express our surprise that he should have made so free use of the words "Heaven," &c.; and that his appeals to the Deity should be so frequent and so irreverently introduced. It exhibits a very bad taste, to say nothing more of it. This, by the way. Next week, we propose giving several extracts, which deserve, from their beauty, to be registered in our columns.

DRURY LANE.—*Mary Stuart*, the merits of which we have already discussed, continues to be performed three times a week, and attracts full houses. In justice to the author, we have inserted elsewhere some of the best passages we can find, to show that if his play be not adapted to dramatic representation, it yet possesses attractions for the closet. Were MACREADY withdrawn—he sat for the portrait of *Ruthven* to the author—*Mary Stuart* would be played to empty benches. It has been cut and hacked, as we before observed, to suit one actor, and one only; hence its partial success.

ENGLISH OPERA.—The *Concerts à la Musard* increase in popularity each successive week, and the performances are so regularly varied, that the same company meet our eye whenever we happen to drop in,—which is constantly. From choice, we prefer an evening spent here to all the allurements held out at the Metropolitan theatres. At the latter, the eye only is caught; at the former, there is food for thought, and a rare intellectual treat. The one is a body without a soul, the other is both body and soul.

OLYMPIC.—This theatre opened for the season on Saturday, with two new pieces, and an "occasional address" by Mr. BUTLER, the lessee. The house was crowded to the ceiling. The entertainments are to be quite à la *Vestris*, and from what has been already done, we may safely predict a successful season. The stage-appointments, and the *mise en scène*, are precisely similar to those under the *régle ancienne*, and we have little doubt that the same frequentors will return to their old favorite haunt. Can they do better?

The new grand opera in preparation at Drury-lane, some of the music of which has been composed by his Royal Highness Prince Albert, will not, it is understood, be brought out until after the withdrawal of the new tragedy, *Mary Stuart*.

The sum paid to Madame *Vestriss* and Mr. HAMMOND, the respectable lessees of Covent-garden and Drury-lane, out of the privy purse, for admitting the public gratuitously, on Monday evening, was 800/.; namely, 400/. to each lessee. The same amount was given to the patent theatres at the coronation.

F. LABLACHE, jun., and Madame F. LABLACHE, (late Miss F. Wyndham), had the honor of singing on Wednesday night at her Majesty the Queen Dowager's *sorée*.

* At Brussels.

ADVERTISEMENTS.

WATERPROOFING.—VAUGHAN and CO.
beg leave to call the attention of the trade and the public generally to their original and peculiar WATER, PROOFING PROCESS, by which operation all cloths, merinoes, silks, and other fabrics, are rendered impervious to water without obstructing the free passage of air and perspiration, or imparting the slightest odour. Materials waterproofed by Vaughan and Co. are also much improved in beauty and durability. Specimens of every description are now on view at their establishment, 5, Great Portland-street, Oxford-street. Factory, Lower Northampton-street, Clerkenwell.

RHEUMATISM.

ROYAL LETTERS PATENT have recently been granted to MR. COLES, of CHARING CROSS, for a Medicated Band, which positively cures Rheumatism, Lumbago, Cramp, &c., &c. The Band is worn near the part affected, and may be removed at pleasure. A great public functionary connected with one of our London Hospitals, Morris Levesley, Esq., whose case, to use his own expression, had baffled every medicine that was quack, and every medicine that was not quack, has sent Mr. Coles his written testimonial, which may be seen at 3, Charing Cross; where he admits that Mr. Coles's Rheumatic Bands have completely subdued his disease; and he declared there was not a man upon the face of the earth who had more reason to be grateful to another than he had to Mr. Coles, he would have given Mr. Coles his certificate seven years sooner, had not the late Henry Earle, Esq., given him a gentle hint that he would offend their physicians if he did. The best certificate that has ever been given to Mr. Coles, was from the pen of Dr. Croker, brother to J. W. Croker, Esq., late of the Admiralty.

Joseph Clay, Esq., of Arden-mills, Denton, near Manchester, in a letter, dated July 2, 1835, says:—I have received the rheumatic bands, the whole of which I have worn since May last, and I have the pleasure to state, that they have relieved my sufferings in my shoulders, wrists, knees, and hip. I still feel weak in my ankles, but on the whole I think, by persevering with them, they will make me young again.

The Rev. Mr. Wilder, of Charlton-rectory, near Newmarket, in a note, dated 20th October, 1835, says:—That he has suffered very severely from sciatica, for more than two years, that about three weeks since he obtained one of Coles's medical bands, and the pain has during the short time he has worn it, nearly, if not entirely, left him. He had tried many supposed remedies without receiving any benefit.

General Wilder has another son in the army, who has been cured by the use of the Medicated Bands, and has cured others by lending them.

Sir,—I am in justice bound to state, that in consequence of a virulent attack of yellow fever, I returned from the West Indies with paralysis in my left hand, and a severe rheumatic affection in my right thigh. That by the use of the Waters of Weisbaden I got rid of the paralysis; but the acute pain in my limb still continuing, I applied and wore for a considerable time, with the most happy result, your medical band, which afforded me immediate relief.

I am, sir, your obliged servant,

A. M. MAXWELL, Lieut.-Col. 36th Regt.
Boulogne, May 17, 1837.

Lieutenant-Colonel Stated, of the 3d Regiment of Light Dragoons, informs those who have rheumatism that he has worn Coles's medicated bands four months; that they have relieved him from a state of suffering scarcely to be described. The colonel, to evince his gratitude to Mr. Coles, has authorised him to make use of his name in any way he thinks proper.

4, Craven-street, Strand, London, April 22, 1837.

Colonel Franklin acquaints Mr. Coles, that the medicated bands furnished to him have entirely removed the pain in his shoulder and arm, in which parts he had been for many months a great sufferer from rheumatism, although employing various remedies in hopes of obtaining relief; the pain continued, and he was unable to pull off his coat or dress himself without assistance. Colonel Franklin sends Mr. Coles this testimony to make what use he pleases.

Blackheath, March 22, 1838.

I hereby certify, that I had a severe attack of rheumatism in my hand and wrist, and could neither button my coat, nor dress or undress myself without assistance; that I applied Coles's patent medicated band, which removed the pain in six hours, and in two days I was perfectly free from the complaint.

ROBERT SMITH.

19, Gloucester-street, Queen-square, March 3, 1838.

Sir,—During the last eight months I have been severely afflicted with sciatica, lumbago, and Rheumatism, for which I could get no relief, even under the best medical advice. Your Medicated Bands were recommended to me by persons whom they had relieved, and I am happy to say that they afforded me, during the most acute sufferings, almost instantaneous relief, and at less than one-twentieth part of the

expense that I had previously incurred. You are at full liberty to make what use you please of this letter, for so invaluable a discovery cannot be too widely circulated. I am, Sir, yours greatly obliged,
R. TYAS.
13, Cecil-street, Strand, London, 21st May, 1838.

Sir,—A patient of mine, who, from repeated attacks of fever and long-continued illness, became paralyzed in both hands, and the flesh of his arms much reduced from his elbows downwards, I recommended your Medicated Bands, which he wore for several weeks, and to my surprise his flesh became firm, and his strength wonderfully restored. I then advised him to try the hot waters at Bath, where he experienced a still further change, and he is now a useful member of society, and that he never would have been, in my opinion, had he not employed your Bands. I am your obedient servant,
JOSEPH CLARK, Surgeon.
Park-st., Camden Town, June 2, 1838.

Sir,—Having been suffering from rheumatism four years, with scarcely an interval of ease, arising from having dislocated my shoulder, I applied one of your Medicated Bands, which I wore for three weeks; but finding no mitigation of pain, I applied a much larger Band, in addition to the former, which, I am happy to say, relieved me in twenty-four hours. I am, Sir, your grateful and very humble servant,
ROBERT ROSS.

Nightingale Hall, Lower Edmonton, Nov. 23, 1838.

Sir,—I have long been a sufferer from sciatica and rheumatism, and have employed many patent medicines, and the usual medical prescriptions which failed to relieve my sufferings; I purchased one of your Medicated Bands also, which I wore for three days, and I have gone on one year without feeling a return of the complaint.

I am, Sir, yours with gratitude,
GEORGE PAGE,
At the Marquis of Tweeddale's,
15th June, 1839.

Sir,—Having had many severe attacks of Rheumatism in my shoulder, and finding all internal means inadequate to relieve my sufferings, though recommended by the first medical gentlemen in Liverpool and Gloucester, in September last, I purchased one of your Bands, which I wore about two months; and I am happy to say, completely subdued my complaint, and I have not since worn it.

I am, Sir, yours respectfully,
WILLIAM BRADSTOCK,
At Messrs. Hodge and Lowman's,
260, Regent Street.

London, March 20, 1839.

Mr. Coles could now fill a volume with such testimonials, but let this suffice.

On the day of her Majesty's Coronation, Mr. Coles was seized with sciatica when in Hyde-park, where he had gone to see the fire-works, and was obliged to quit the scene and apply the usual remedy to prevent the increase of the complaint; but in spite of his remedy, he got worse the whole night, and the next day was scarcely able to move, but in 24 hours he was again perfectly free from the complaint, and has had no return. He applied a much greater quantity of Bands than he ever employed at any time previous to this attack.

Persons subject to rheumatism, lumbago, sciatica, or pains in the kidneys, weak knees, bruises, tooth-ache, ear-ache, or shooting pains in any part of the body or limbs, arising from want of circulation of the blood, or obstructed perspiration, should keep these Bands by them, as they will preserve their virtues for years in any climate, and when they feel symptoms of its approach, meet the disease half-way. Put them on.

"Coles on Rheumatism," price twopence, is a single post-letter, which will be forwarded (gratis) to any part of the kingdom. The Bands may be procured through any London coachman or guard. All letters must be post-paid.

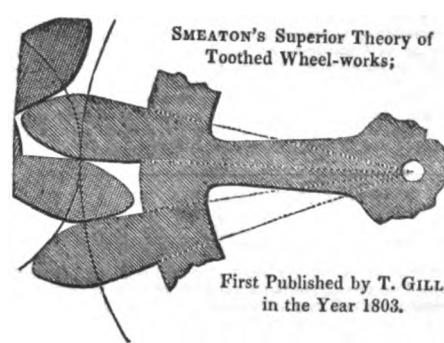
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A WEEKLY BRITISH AND FOREIGN MISCELLANY OF

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PRINTED BY JOHN EAMES, 7, TAVISTOCK STREET, COVENT GARDEN.

No. 29.]

SATURDAY, FEBRUARY 22, 1840.

[PRICE FIVEPENCE STAMPED.
CIRCULATING FREE BY POST.]

ON THE PATENT LAWS OF ENGLAND.

(Continued from our last.)

LICENSES UNDER PATENTS.

The most important feature of our patent jurisprudence, is that which permits a patentee to delegate the right of exercising the invention under the letters patent to others, by granting licenses for that purpose. Until within a few years, considerable doubts existed, whether a license granted to more than five persons came within the meaning of the prohibitory clause in the patent, which restrained the assignment of the patent right to any number of persons not exceeding five; but that point has been in a great measure set at rest, by the introduction of a clause, in recent patents, to the effect that if at any time the letters patent, or the liberties or privileges thereby granted, shall become vested in, or in trust for more than twelve persons, or their representatives, at any one time as partners, dividing or entitled to divide the benefits or profits obtained by reason of the letters patent, then the same, and all liberties and advantages whatsoever thereby granted, shall cease and become void; "provided that nothing therein contained shall prevent the granting of licenses in such manner and for such consideration, as they may by law be granted." It will therefore appear, that as the above clause which restrains the right to twelve partners, is distinct and independent of the saving provision for granting licenses, a patentee may grant an unlimited number of licenses without destroying the validity of the letters patent.

A patentee, or assignee of the patent, may license, or consent, or agree with others to use and exercise the invention for all or any part of the term granted by the patent: such license, consent, or agreement, should be in writing, under the hand and seal of the patentee or assignee, as the case may be. A license to use the invention may be as extensive as the patent; or the patentee may impose such terms as he thinks fit, both as to the manner of using and exercising the invention, and as to the places or district (within the limits of the patent) where the privilege is to be enjoyed.

In some cases, it becomes matter of consideration, whether the patentee will derive more advantage by arbitrarily restricting the invention to his own manufactory, or by granting licenses to others for the exercise of it upon remunerating terms. If a man is a great manufacturer himself, in the business to which his invention relates, his interest in his manufactory may be greater than in granting licenses under his patent to others; but it is evident that such cannot be the case, unless he has

the means of supplying the public demand for the new article very freely. If he permits no competition, he may keep up a high price; but if he persists in that course too far, he will check his own trade; for he must then meet the competition of all those who manufacture the article in the old way, and must also resist the determined attacks of those who will infringe his right, and conspire to defeat his patent. Mr. Daniel, some years since, invented a new process to improve the lustre of woollen cloth, by immersing it in hot water, after the pile was set smooth. The operation was stated to cost not more than a penny per yard, and that it increased the value of different cloths, to the amount of from two to five shillings per yard; that is to say, the same cloth would sell for so much more in the market, by a penny per yard being expended upon it in performing the new process. He was a manufacturer, and obtained a patent for the invention in 1819, which was repealed by *scire facias* in 1827. The patent produced a very great revenue to the patentee, for he received at one time a tax of twopence per yard for license under the patent; and that tax was inconsiderable to those who paid it, when compared with the advantages which resulted to them from the patent process. The profit thus derived, far exceeded that which would have accrued to the patentee, solely by improving all the cloth he could make in his own factory; for the practice extended over the whole trade, and as he retained that profit, under the licenses he granted, upon all the cloth made by others on that system, he had the strongest interest to promote its general adoption.

If the patentee had created a monopoly, and confined the improvement to his own trade, he could not have increased the price of his own cloth more than from three to five shillings per yard; for if he had done so, he would have come into competition with those who manufactured better wool, in the old way, without his process.

(To be Continued.)

OVERLAND JOURNEY TO INDIA.

[FROM A CORRESPONDENT.]

MALTA, DEC. 1839.—The passage to India, formerly attended with so much weariness and fatigue, may now be called a party of pleasure; for, instead of a long and tedious voyage round the Cape of Good Hope, one visits many places of well-known interest. Since our departure from London, we have passed through France, from Calais to Marseilles, and having touched in Italy, at Leghorn and Civita Vecchia, are now, in less

than three weeks, in the enjoyment of the clear sunny sky of Malta. The hurry and bustle were, however, unpleasant. Besides, many places of interest pass unnoticed, although within reach.

The journey through France, at all times slow, is during the winter months far more so from the rains, and the consequent state of the roads. To us, whose time for embarkation at Marseilles was fixed, these delays were exceedingly irksome. From Calais to Paris 36 hours were required instead of 30. One day in Paris was spent in the regulation of passports, after which we started for Chalons-sur-la-Saone, and arrived there in 52 hours. After one night's repose, the steamer took us in 7 hours to Lyons, and on the following morning we embarked on board the Eagle steam-boat, to descend the Rhine. It is worthy of notice, that however much the navigation of those rivers has been improved within ten years, much still remains to be done, which, as the proprietors of the actual steam-boats promise, will, one may hope, be speedily accomplished. The passage from Lyons to Avignon, performed within 12 hours in summer, now requires 30, as one night is usually spent at one of the towns on the shore. On reaching Avignon, we, by immediately engaging places in the night-boats for Marseilles, succeeded finally in being in time to secure our berths, and to make arrangements for starting that evening from the French shore.

To all who may wish to enjoy the pleasure of an overland journey, it will be necessary, as some old steady travelling companions now declare, to start at least one month before the time designed for joining the Suez steam-boat, in order to allow time for visiting Genoa, Florence, Rome, Naples, Athens, Alexandria, and Cairo. The hurry of our journey is such, that we despair of having an opportunity of seeing any of these places. We arrive and must proceed immediately, although very few days and very little money would enable us to satisfy our curiosity. There are many steam-boats that leave Marseilles weekly, in which berths may be engaged for different places in Italy, whereby every facility is secured.

The French Government has within three years formed an establishment of ten steam-boats, generally of 700 tons burden, for carrying on a continued communication with Greece, Turkey, Syria, and Egypt. To any person who recollects the old inefficient mode of correspondence between Athens, Constantinople, Smyrna, Alexandria, &c., and France, as well as England, this establishment will appear a great improvement. Those boats are mostly furnished with English machines, of which many, in consequence of the ignorance or negli-

gence of the engineers on board, are now in a disordered state. It is a curious fact, and illustrative of the system actuating the French Government, that many young men are taken from the engineer school at Chalons sur le Marne after one year's study, and placed on board the Government boats, while the proprietors of the private steam-boats are particularly careful to intrust their machines to English engineers, who by a long apprenticeship and several years' attention, have learned the business.

Those French government steam-boats have another object, which it would be well to recommend to the imitation of those whose fiat rules the fate of British India. These are so arranged as within a short time to be fitted up as armed vessels, thereby, at least in intent, affording a strong force for warlike purposes. The intention was no doubt very much neutralised by the bad state of the machinery. At this period, when public attention is so much drawn to the steam communication with India, the question is obvious, "Ought not the Brito-Indian Government to take into consideration the propriety of forming a similar establishment of good steam-boats, applicable during peace to the usual purposes, and in case of war to the support and protection of their valuable Eastern possessions?"

Insufficient as the present French steam-boats must be in time of war, and dangerous as in all probability they will in a short time become, even in times of peace, they have produced in the Levant an extraordinary change. In connexion with British and Austrian boats, they are to be found in various places. To the activity of the steam-boats may in a great measure be attributed the safety of Turkey: such is their force, that the Russian Czar, whose labors during 13 years have been directed to the formation of an imposing fleet in the Black Sea, as well as to crushing all attempts at liberty and civilisation in his benighted country, has been obliged to adopt them too. Various steam-boats for the use of Russia have touched here lately on their way to the Black Sea. Besides, one may meet with Russian agents on board the French boats, who are all inquisitive about every one's business.

In consequence of the discussion now pending between the French and Neapolitan Governments, the steam-boats of the former do not now touch at Naples. 36 hours are passed in the voyage between Marseilles and Leghorn, where a delay of 8 hours takes place; 15 hours are subsequently passed between Leghorn and Civita Vecchia, when another delay of 6 hours occurs. From 60 to 72 hours are then necessary for the voyage to this island. The French government steam-boats start from Marseilles on the 1st, 11th, and 21st of each month, the whole arrangements are fixed by an ordinance of the Minister at Paris, and translations of the rules of departure and prices are to be found in the various guides published in London.

One of the great difficulties attendant upon this mode of travelling arises from the different languages used by English and Frenchmen. The regulation on board is, that there are two meals daily, plentifully supplied in the French style—viz., a *déjeuner à la fourchette* at 10 o'clock, and dinner between 5 and 6 o'clock. The continual demand of John Bull for tea, and the difficulty of supplying its palatable accompaniment, milk, sometimes give considerable annoyance to the steward and his assistants, but good-humor and patience do much. Occasional differences arise also from other causes, which, notwithstanding the national antipathies exhibited by the impassioned persons, are in most instances removed by proper interpretations. The cost of the breakfast and dinner, of which every passenger is supposed to partake, and for which payment is required, is 6s. or 5s. All extras are charged separately.

It is a continual source of discussion why the British government does not, as the French has done, make effectual arrangements for steam-boats for the use of the India mail. Some good boats from Marseilles to Alexandria is a desideratum. A

French naval officer told me that the British government had entered into arrangements with the French for the conveyance of the mail to and from Egypt and France, and that two large steam-boats were to be got ready for the purpose. The sum of 1,600,000f. (£64,000) allowed for the purpose, together with the postage of the letters in France, as well as the sum of £25 paid by each passenger, will prevent any great loss to the contractors.

(To be Concluded in our next.)

tares by a single process of firing or hardening in the enamelling kiln, Feb. 13.

JOSEPH WHITWORTH, Manchester, engineer, certain improvements in machinery tools, or apparatus for planing, boring, and cutting metals or other substances, Feb. 6.

MILES BERRY, Chancery-lane, civil engineer, a new or improved method of obtaining the spontaneous reproduction of all the images received in the focus of the camera obscura, Feb. 13.

JAMES CAPPLE MILLER, Manchester, certain improvements in printing calicoes, muslins, and other fabrics, Feb. 15.

JOHN MASON, Rochdale, machine maker, certain improvements in machinery or apparatus for boring, and turning metals and other substances, Feb. 15.

WILLIAM BRIDGES ADAMS, Porchester-terrace, Bayswater, and JOHN BUCHANAN, Glasgow, coach-builder, certain improvements in the construction of wheel carriages, parts of which improvements are also applicable to machinery for propelling, and also for the purpose of securing ships and other vessels, and for communicating motion between different portions of machinery, Feb. 15.

EXPIRED PATENTS.

A LIST OF PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING FEBRUARY 15, 1840.

ENGLAND.

WILLIAM WARREN, Crown-street, Finsbury square, improvements in the process of extracting from the peruvian bark medicinal substances or properties known by the name of quinine and cintronine, and preparing the various salts to which these substances may serve as a basis, Feb. 11.

JOHN LANE HIGGINS, Oxford-street, London, improvements in the construction of the masts, yards, sails, rigging of ships, and smaller vessels, and smaller vessels, and in the tackle used for working or navigating the same, Feb. 11.

SPECIFICATIONS.

NOTICE.

In accordance with the determination expressed in our 26th number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of March 14th. Each party will receive, in addition, a *private communication* to the same effect.

JOHN GEORGE BODMER, Manchester, engineer, certain improvements in machinery, tools, or apparatus for cutting, planing, turning, and rolling metal and other substances.

JAMES YATES, Effingham works, Rotherham, York, ironfounder and earthenware manufacturer, certain improvements in making, forming, and producing raised or projecting letters, mouldings, figures or other ornamental work for external decorations of buildings, and other purposes, Jan. 1.

GEORGE PHILOX, Wellington-street, London-bridge, watchmaker, certain improvements in chronometers, watches, and other time keepers, Jan. 6.

NELSON JOHN HOLLOWAY, Pentonville, Middlesex, an improved head for carriages, Feb. 13.

HENRY BROWN, Mile-end, Middlesex, librarian to the London Mechanics' Institution, a new covering or plating for household furniture, picture frames, cabinet and fancy work, and other articles of domestic and personal use, and the mode of making such covering or plating, Feb. 13.

JOHN WOOD, of Burslem, Stafford, manufacturer of mineral colors, a new method or process in the application and laying on of the substances used in the printing, coloring, tinting and ornamentation of china, porcelain, earthenware, and other wares of the same description, by which such wares can be painted and ornamented with flowers and other devices in a much cheaper, and more simple and expeditious manner than by any process now in use, and colors of all or any variety may be painted, shaded, mixed, and blended together in one, and the same design or pattern, and hardened or burnt into the substance of the aforesaid

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED FROM JANUARY 1ST, TO JUNE 30TH, 1834.

(For the year 1835, see page 51.)

- Anchors, April 26, Christophers, J.
- Angles and distances measuring, March 27, Taylor, J.
- Bailey,—see Rice, L. J. C.
- Bobbin-net lace, May 27, Crofts, W.
- Boilers, Jan. 18, Oberlin, J. J. L.
- Boilers,—see steam-engines, B. J. G.
- Boilers, Jan. 23, Yates, W. T.
- Boilers of engines,—see metallic pistons, M. J.
- Bolts,—see Screws, B. J.
- Bolts, rivets, nails-making, Feb. 19, Berry, M.
- Bolts,—see Nails, F. T. J.
- Books,—see Leaves turning over, R. J.
- Boot-jack, June 17, Jecks, J.
- Candles mould-making, May 22, Morgan, J.
- Carding cotton, flax, &c., Feb. 27, Smith, J.
- Carding,—see Wool, W. J.
- Cards for carding wool, &c., March 27, Walton, J.
- Cement, April 19, Cassell, J. H.
- Chalkholder,—see Pencil, H. J. D.
- Chronometers, watches, &c., March 20, Baker, T.
- Coffee,—see Rice, L. J. C.
- Condensers, steam-engines, May 6, Gittins, W.
- Condensing aeroform substances, &c., January 13, Bates, J.
- Corn-mill, Jan. 1, Roberts, R.
- Distances measuring,—see Angles, T. J.
- Distilling, April 22, Shee, J.
- Drying and Printing calicoes, &c., June 14, Bush, M.
- Dyeing wool and fabrics yellow, April 8, Hendriks, H.
- Drying cotton, &c., June 10, Bridson, T. R.
- Engraving and etching on cylindrical surfaces for printing, March 31, Deverill, H.
- Evaporation of fluids, &c., April 8, Crosley, H.
- Fermenting ale, &c.—see Valve, K. E.
- Finishing silks, &c., Feb. 8, Gerard, J. F. V.
- Fire-arms, March 13, Manton, J. A.
- Fire-arms,—see Guns, G. W. S.
- Fire-arms, May 22, Heurteloup, C. L. S., Baron.
- Fire-places,—see Furnaces, W. E.
- Fire-safes, boxes, &c., Feb. 13, Marr, W.
- Fur cutting machine, Jan. 13, Plant, F.
- Furnaces or fireplaces, Jan. 23, Wolf, E.
- Furnaces,—see Grates, B. J. G.
- Fustian corded,—see Power looms, M. T. J.
- Galanism to cure diseases, March 13, Hawkins, J. J.
- Grates, stoves, furnaces, May 24, Bodmer, J. G.
- Guns, fire-arms, Feb. 8, Gillett, W. S.

Guns,—see Fire-arms, H. C. L. S. Baron.
 Guns,—see Fire-arms, M. J. A.
 Heating and ventilating, Jan. 18, Morgan, W.
 Hemp for heckling, &c.—see Phormium, S. A.
 Hoops for casks, &c., March 20, Young, J.
 Hydraulic machine, May 8, Brunier, L.
 Hydraulic power engine, Feb. 27, Motte, V.
 Iron working,—see Hoops, Y. J.
 Lace embroidered, March 27, Nunn, H. W.
 Lace-net and machinery, June 5, Gibbons, J.
 Lamps, Feb. 8, Miller, G. A.
 Lamp, Jan. 4, Beate, J. T.
 Leather,—see manipulating, E. T.
 Leaves turning over of music and books, Feb. 26,
 Ramsey, J.
 Life-preserved in shipwreck, June 30, Bateman, J.
 Light apparatus for producing, Jan. 18, Boynton, J.
 Locomotive carriages, March 31, Millchap, G.
 Locomotive machinery, March 1, Linkins, H.
 Locomotive machinery,—see Motive power, D. J. C.
 Looms for weaving, March 20, Johnson, T.
 Machinery,—see Lace-net, G. J.
 Manipulating leather, May 22, Edmonds, T.
 Measuring,—see Angles and distances, T. J.
 Mechanical purposes,—see Chronometers, B. T.
 Metallic pistons, &c. &c., May 12, McDowall, J.
 Mill,—see Corn, R. R.
 Motive power, &c., May 24, Chapeaurouge, P. A. de
 Motive power, &c., March 29, Douglas, J. C.
 Music,—see Leaves turning, R. J.
 Nails,—see Bolts, B. M.
 Nail-making, March 18, Slocum, S.
 Nails, spikes, bolts, March 6, Fuller, T. J.
 Nails-making, Feb. 27, Fuller, T. J.
 Nail-making, March 18, Cordes, J. J.
 Paddle-wheel, June 23, Symington, W. A.
 Pens and penholders, Jan. 25, Arnott, N.
 Penholder,—see Pencil, H. J. D.
 Pencil, pen and chalkholders, Feb. 27, Harding,
 J. D.
 Perpetual motion,—see Motive power, C. P. A. de
 Phormium tenax preparing, &c., May 24, Smith, A.
 Pigments, &c. Jan. 16, Attwood, C.
 Pins,—see Screws, B. J.
 Pin-making, March 18, Slocum, S.
 Power-looms, &c., June 16, Melledeew, T.
 Power-looms, &c., May 27, Kenworthy, W.
 Printing calicoes, &c.—see Drying, B. M.
 Pump, &c., May 6, Noble, W. A.
 Pumps, April 10, Asda, A. V. J.
 Pump,—see Raising water, B. J.
 Pump-bucket,—see Metallic piston, M. J.
 Raising or conveying water, April 12, Beare, J.
 Refrigerating fluids,—see Condensing, B. J.
 Rice, barley, coffee cleaning, June 24, Lyman, J. C.
 Rivets,—see Bolts, B. M.
 Rivets,—see Screw blanks, C. J. J.
 Roving and spinning cotton, &c. Feb. 8, Threlfall, R.
 Roving and slubbing cotton, &c., June 3, Simpson,
 R.
 Saddles, June 5, Grenfell, G. St. L.
 Saddles-side, April 22, Segundo, J. J.
 Salt, Jan. 25, Garrod, W.
 Screw-blanks, rivets, &c., March 18, Cordes, J. J.
 Screw-cutting, Feb. 27, Whitworth, J.
 Sheathing, preparing metals for, April 17, Hay, T.
 Silks, &c.,—see Finishing, G. J. F. V.
 Slubbing,—see Roving, S. R.
 Spikes,—see Nails, F. T. J.
 Spinning-cotton, &c., Feb. 20, Smith, J.
 Spinning,—see Roving, T. R.
 Screws, pins, bolts, April 24, Bethell, J.
 Soap, substitute for, April 19, Hewitt, J.
 Spinning-wool, &c., June 17, Wilson, C.
 Steam-engines,—see Condensers, G. W.
 Steam-engines, &c., Feb. 13, Hall, S.
 Steam-engines, April 26, Wolf, E.
 Steam-engines and boilers, May 24, Bodmer, J. G.
 Steam-engines, March 13, Morgan, W.
 Steam-carriages and engines, Jan. 25, Hick, B.
 Stone reducing,—see Surgical instrument, H. J. L.
 Stoves,—see Grates, B. J. G.
 Stretching machine, April 12, Morand, S.
 Sugar making, Feb. 27, Archibald, W. A.
 Surgical instrument for reducing stone, June 16,
 Hannah, J. L.

Tea-kettles, Feb. 15, Griffiths, T.
 Valve for close fermenting ale, &c., June 7, Keele, E.
 Ventilating,—see Heating, M. W.
 Wadding for fire-arms, June 26, Walker, R.
 Warming-pans, May 24, Hawkins, S.
 Watches,—see Chronometers, B. T.
 Weaving machine, May 24, Smith, L. and J.
 Weighing machine, May 22, Bather, G.
 Weighing machine, Feb. 27, Goddard, R. H.
 Wheels, carriage of, iron, &c., Jan. 13, Tigar, P.
 Wood cutting, May 6, Shankland, A. B.
 Wool combing, Feb. 20, Noble, J.
 Wool carding engine, June 12, Whitaker, J.
 Woollen cloths, raising the pile of,—see Carde, W. J.
 Woollen cloths, &c., dressing, Mar. 31, Hirst, W.
 Woollen cloth machinery, Feb. 24, Haden, G.
 Woollen cloths dressing, May 13, Dutton, J.
 Woollen fabrics dressed, &c., Jan. 14, Walton, J.
 Yellow,—see Dyeing, H. H.

BRITISH PATENTEES.

AN ALPHABETICAL LIST OF INDIVIDUALS WHO HAVE
 TAKEN OUT PATENTS IN ENGLAND, FROM JAN. 1,
 TO JUNE 30, 1834.

(For the year 1835, see page 52.)
 Archibald, William A., Sugar making, Feb. 27.
 Arnott, Neil, Pens and penholders, Jan. 25.
 Asda, Auguste, V. J., Pumps, April 10.
 Attwood, Charles, Pigments, &c., Jan. 16.
 Baker, Thomas, Chronometers, watches, and to other
 mechanical purposes, March 20.
 Bateman, Jonas, Life preserver in shipwreck,
 June 30.
 Bates, Joshua, Condensing aeriform substances and
 refrigerating fluids, Jan. 13.
 Bather, George, Weighing machine, May 22.
 Beale, Joseph T., Lamp, Jan. 4.
 Beare, John, Raising or conveying water, April 12.
 Bertie, John,—see Gibbons, James.
 Berry, Miles, Making bolts, rivets, nails, Feb. 19.
 Bethell, John, Screws, pins, bolts, April 24.
 Bodmer, John G., Grates, stoves, furnaces, May 24.
 Bodmer, John G., Steam-engines and boilers,
 May 24.
 Boynton, James, Apparatus for producing light,
 Jan. 18.
 Bridson, Thomas R., Drying cotton, &c., June 10.
 Brunier, Louis, Hydraulic machine, May 8.
 Bush, Matthew, Drying and printing calicoes, &c.,
 June 14.
 Cassell, John H., Cement, April 19.
 Chapeaurouge, Philip A. de, Motive power, or per-
 petual motion, May 24.
 Christopher, John, Anchors, April 26.
 Cordes, James J., Rivets and screw blanks, &c.,
 March 18.
 Cordes, James J., Nail making, March 18.
 Crane, Henry,—see Young, John.
 Crofts, William, Bobbin net lace, May 27.
 Crosley, Henry, Evaporation of fluids, &c., April 8.
 Deverill, Hooton, Engraving and etching on cylin-
 drical surfaces for printing, Mar. 31.
 Dobson, Benjamin,—see Sutcliff, John.
 Douglas, John C., Motive power and locomotive
 machinery, Mar. 29.
 Dutton, James, Dressing woollen cloths, May 13.
 Edmonds, Thomas, Manipulating leather, May 22.
 Fuller, Thomas J., Nails, spikes, bolts, Mar. 6.
 Fuller, Thomas J., Nails making, Feb. 27.
 Garrod, William, Salt, Jan. 25.
 Gerard, Jacques F. V., Finishing silks, &c., Feb. 8.
 Gibbons, James, Lace net and machinery, June 5.
 Gillett, William S., Guns, firearms, Feb. 8.
 Gittins, William, Condenser, steam-engine, May 6.
 Goddard, Robert H., Weighing machine, Feb. 27.
 Grenfell, George St. L., Saddles, June 5.
 Griffiths, Thomas, Tea-kettles, Feb. 15.
 Haden, George, Woollen cloth machinery, Feb. 24.
 Hall, Samuel, Steam-engines, Feb. 13.
 Hannah, James L., Surgical instrument for reducing
 stone, June 16.
 Harding, James D., Pencil, pen, and chalk holders,
 Feb. 27.

Hawkins, John J., Galvanism to cure diseases, Mar. 13.
 Hawkins, Stephen, Warming-pans, May 24.
 Hay, Thomas, Preparing metals for sheathing
 April 17.
 Hendriks, Herman, dyeing wool and fabrics yellow,
 April 8.
 Henreteloup, Charles L. S. Baron, Firearms, May 22.
 Hewitt, John, Substitute for soap, April 19.
 Hick, Benjamin, Steam carriages and engines,
 Jan. 25.
 Hirst, William, Dressing woollen cloths, &c., Mar. 31.
 Hornby, William H.,—see Kenworthy, William.
 Jecks, Isaac, Boot-jack, June 17.
 Johnson, Thomas, Looms for weaving, Mar. 20.
 Jones, Joseph,—see Melledew, Thomas.
 Keele, Edward, Valve for close fermenting ale, &c.,
 June 7.
 Kenworthy, William, Power looms, &c., May 27.
 Linkins, Henry, Locomotive machinery, Mar. 1.
 Lyman, John C., Cleaning &c. rice, barley, coffee,
 June 24.
 M'Dowall, John, Metallic pistons, pump buckets,
 and boilers of engines, May 12.
 Manton, John A., Firearms, March 13.
 Marr, William, Fire-safes, boxes, &c., Feb. 13.
 Melledew, Thomas, Power looms and corded sus-
 tian, June 16.
 Millchap, George, Locomotive carriages, March 31.
 Miller, George A., Lamps, Feb. 8.
 Morand, Samuel, Stretching machine, April 12.
 Morgan, William, Heating and ventilating, Jan. 18.
 Morgan, Joseph, Mould-candles making, May 22.
 Morgan, William, Steam-engines, March 13.
 Motte, Vincent, Hydraulic power engine, Feb. 27.
 Noble, William A., Pumps, &c., May 6.
 Nobles, James, Wool-combing, Feb. 20.
 Nunn, Henry W., Embroidered lace, March 27.
 Oberlin, Jean, J. L., Boilers, Jan. 18.
 Plant, Frederick, Fur cutting machine, Jan. 13.
 Ramsay, John, Turning over leaves of music and
 books, Feb. 26.
 Reid, John P.,—see Johnson, Thomas.
 Roberts, Richard, Corn-mill, Jan. 1.
 Segundo, Juan J., Side-saddles, April 22.
 Shankland, Alexander B., Wood cutting, May 6.
 Sharp, Thomas,—see Roberts, Richard.
 Shee, Joseph, Distilling, April 22.
 Simpson, Richard, Roving and slubbing cotton, &c.,
 June 3.
 Slocum, Samuel, Nail making, March 18.
 Slocum, Samuel, Pin making, March 18.
 Smith, Andrew, Preparing phormium, tenax, hemp,,
 &c., for heckling and spinning, May 24.
 Smith, James, Spinning cotton, &c., Feb. 20.
 Smith, James, Carding cotton, flax, &c., Feb. 27.
 Smith, Luke and John, Weaving machine, May 24.
 Sutcliff, John,—see Threlfall, Richard.
 Symington, William and Andrew, Paddle-wheel,
 June 23.
 Taylor, Janet, Measuring angles and distances,
 March 27.
 Threlfall, Richard, Roving and spinning cotton, &c.,
 Feb. 8.
 Tigar, Penneck, Iron carriage wheels, Jan. 13.
 Walker, Richard, Wadding for fire-arms, June 26.
 Walton, James, Woollen fabrics dressed, &c., Jan. 14.
 Walton, James, Cards for carding wool, and raising
 the pile of woollen cloths, March 27.
 Whitaker, James, Wool carding engine, June 12.
 Whitworth, Joseph, Cutting screws, Feb. 27.
 Williams, William,—see Hay, Thomas.
 Wilson, Charles, Spinning wool, &c., June 17.
 Wolf, Ernst, Steam-engines, April 26.
 Wolf, Ernst, Furnaces or fireplaces, Jan. 23.
 Yates, W. T., Boilers, Jan. 23.
 Young, John, Iron for hoops of casks, &c., Mar. 20.

FOREIGN PATENTS.—BELGIUM.

LIST OF PATENTS RECENTLY GRANTED BY THE
 BELGIAN GOVERNMENT.
 (Continued from No. 27.)

White, Robert, merchant, (address Dixon, Hotel
 de Gronendaal, Brussels), a patent of importation

for 5 years, for improvements in the construction of lamps, &c., Jan. 12, 1840.

N. B.—This patent is granted on the following condition and will be declared null and void if the patentee do not strictly comply with it.

The patentee is bound to authorise all the manufacturers of the country, who may require it of him, to set up and work the machine in question; and he is to give them, for that purpose, all the necessary information, in consideration of a fair indemnity, to be agreed upon between the parties, or, in case of dispute, to be fixed by arbitration.

Urting, Robert William, (address, St. Josse-ten-Noode, Rue des Arts, No. 137,) a patent of importation for 10 years, for improvements in the construction of railroads and street pavings, Jan. 17th, 1840.

N. B.—This patent is granted on the same condition as that to Mr. R. White.

Wintle, John Marriot, of London, (address Rue des Meuniers, No. 69,) a patent of importation for 10 years, for improvements in the machinery for spinning wool, cotton, &c., Jan. 19th, 1840.

N. B.—This patent is granted on the same condition as that to Messrs. White and Urting.

Curé, Pierre, the younger, Ghent, (address Rue des Meuniers, No. 69,) a patent of importation for 10 years, for a new loom, (for which a patent was granted Nov. 13th, 1837,) Jan. 19th, 1840.

N. B.—This patent is granted on the same condition as that to Messrs. White, Urting, and Wintle.

Granchamps, G. H. J., mechanical engineer, (address Monsieur Stoclet, attorney, Rue de Sols, No. 10, Brussels,) a patent of invention for 10 years, for an apparatus to produce steam in sufficient quantity for alimenting (pour alimenter) blast furnaces, by means of the heat at present allowed to escape from melting furnaces, Jan. 19th, 1840.

Panis, E., (address Monsieur Pian, Passage de la Monnaie, Brussels,) a patent of invention and improvement for 15 years, (for which a patent was granted July 18th, 1838,) for new machinery in the fabrication of starch, &c., Jan. 19th, 1840.

Van Loo, J. L., the younger, merchant, Ghent, (address Rue de la Caverne, No. 55,) a patent of invention for 15 years, for a new method of extracting starch from potatoes, Jan. 19th, 1840.

Thomas, L., civil engineer, Brussels, (address Rue de l'Escalier, No. 14,) a patent of invention for 15 years, for a means of generating steam through the combustion of the gases which escape from melting furnaces, Jan. 19th, 1840.

Provost, Edward, painter, Brussels, (address Rue des Seurs-Noires, No. 17,) a patent of invention for 10 years, for a method of flattening glass so as to paint on it all sorts of patterns, Jan. 19th, 1840.

Obert, Louis Henri, Ixelles, Brussels, (address Chaussée d'Etterbeek, No. 152,) a patent of invention, for 15 years, for a new system of paving, Jan. 20th, 1840.

Dixon, Ab., Brussels, (address Hotel de Gronendael,) a patent of importation for 10 years, for improvements in steam-engine boilers, and for a means of rendering the combustion of smoke and gases which escape from furnaces more perfect, Jan. 27th, 1840.

Dowling, Thomas, Brussels, (address Hotel de France, Rue Montagne du Parc,) a patent of importation for 5 years, for improvements in fire-arms, Jan. 27th, 1840.

Lingham, Thomas, of London, (address Dixon, Hotel de Gronendael, Brussels,) a patent of importation for 10 years, for an improvement in manufacturing nails, Jan. 27th, 1840.

Dechangy, C. S., the younger, Brussels, (address Rue du Jardin d'Idalie, No. 617, Rue Royal Neuve,) a patent of invention for 10 years, for a new process of refining tallow, Jan. 27th, 1840.

Thierry, Auguste, (address Monsieur Broe d'Anely, No. 20, Rue de la Paille, Brussels,) a patent of improvement for 10 years, for a new system of painting advertisements, for which a patent was granted on Nov. 12, 1838. Jan. 27th, 1840.

General Niclou, (address M. Honorez, No. 39, Rue de la Violette, Brussels,) a patent of invention for 15 years, for a machine for pounding earth and mortar, Jan. 27th, 1840.

Huart, Jean-Charles, Brussels, (address Rue de la Pépinière, No. 19,) a patent of importation and improvement for 10 years, for a new strap used in hydraulic apparatus made of wool or horse-hair, (called "bande hydraulique") Jan. 27, 1840.

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.

MEETING OF THE ACADEMY OF SCIENCES, PARIS, FEBRUARY 3.

(Continued from No. 28.)

M. DUMAS read a treatise, which commanded the uninterrupted attention of the academy for upwards of an hour, upon the important chemical question upon which he is at issue with M. Pelouze, who has thrown down the gauntlet in the field of science, and M. Dumas has not hesitated to accept the challenge. The question is the theory of substitutions, of which M. Dumas is the author, and which he has maintained for the last six years: it has created very great sensation in the scientific world, as the different schools of France and Germany are divided upon the subject of the new doctrines, which bid fair, should they be verified, to effect a complete revolution in chemistry, to overturn the theories of Lavoisier and Berzelius, to do away with the electro-chemical hypothesis, and to establish the science upon an entirely new systematic basis. In order to explain familiarly the theory of substitutions, we have only to imagine a building constructed of a variety of materials, any particular one of which we may take away, and put some other in its stead, without making any further change: for instance, we may substitute for a certain portion of stone a like quantity of marble; whilst the general aspect and harmony of the building, and the arrangement of its elementary and constituent parts, remain undisturbed. It is possible, as contended by M. Dumas, to do the same thing with many of the chemical bodies, which exist in such an infinite variety of combinations. If, by way of example, one of the elements of which ether is composed should be taken away, and replaced by another, without destroying the essential and fundamental character of this chemical body, the process would be, what he calls, a substitution. But it is asked, how far is this theory new? and does it rest upon any firm foundation? upon such a number of well-ascertained facts as will warrant a general deduction?

It has long been known that, in any compound body, one element or substance may be replaced by another, and the science of chemistry depends almost entirely upon the relative proportions according to which this change is made. For instance, sulphuric acid, combined with such a quantity of potash, produces sulphate of potash, or potassium; and combined with such a quantity of barytes, produces sulphate of barytes. Thus the equivalent proportions of each body being known, it is certain beforehand, and without any experiment, that in order to separate the potash from the sulphuric acid, and substitute the barytes, such a relative proportion of barytes is required: for the combinations of different bodies, one with another, cannot be made in any proportions, or by guess; but are regulated by certain laws which are immutable, and which fix the exact ratio which each substance of a compound body shall bear to the other. But the theory of equivalents, as applied to the combinations of the inorganic kingdom, generally produces other compounds very different from, and having no necessary connexion with, the first; and with respect to the productions of the organic kingdom, which are so numerous and so infinitely varied, and which differ among themselves by such very slight

modifications of their component parts, that a little more or less hydrogen or azote can convert an innoxious body, like sugar, into a deadly poison; and with respect to their combinations, which increase every day in number and variety, and seem almost as inexhaustible as organisation itself, the theory of equivalents appears to be by no means conclusive: it indicates the relative proportions in which one substance is to be changed for another, but it cannot pronounce decidedly upon the result.

In the theory of substitutions, on the contrary, the result is known. The number of new combinations is small, whilst the fundamental chemical character of the body remains unchanged. The following illustration of the two theories was given by M. Dumas. Supposing a statue of Venus, or Milo, for example, to be cast in bronze, in brass, or in any other metallic alloy; the theory of equivalents would indicate exactly what quantity of zinc might be substituted for the copper in the bronze, so as to preserve the same relation between the elements of the alloy; but without any consideration of the form of the metal, or of the statue, which, whether it remained as it was, or was destroyed by the new combination, would be of no consequence, according to the old system: but the express object of the theory of substitutions is to point out all the changes that can be made in any of the component parts of the metallic mass, without destroying the general nature and form; to alter any particular portion of a chemical body without altering its essential character and appearance as a whole. Thus, the old theory of equivalents comprehends, in some measure, the theory of substitutions, inasmuch as it depends upon chemical action; but the latter is not the less a remarkable and important division of chemical action generally; just the same as terrestrial magnetism, supposing that it should ever be proved to be identical with the electric principle, would still be considered as a special quality, which it would be useful to distinguish from the general power called electricity.

M. FLOURENS read the first part of an interesting physiological treatise on ossification, and on the properties and nourishment of the bones. He alluded to some experiments made long ago by M. Duhamel, showing that the bones of animals, fed with madder, turn red. M. Flourens has followed up these experiments, beginning with pigeons; it appears that the younger the animal is, the sooner the effect of feeding it upon madder shows itself in changing the color of the bones; but that in all cases it is only the hard bony parts which turn red, and that the cartilaginous parts never have any tinture of the madder. Thus all the bones in the animal economy can be made distinguishable by the action of this plant, which may eventually serve as a means of throwing light upon many questions relative to their development, their nourishment, and even their diseases. M. Flourens exhibited several very beautiful anatomical preparations illustrative of his work.

M. CHEVREUL read, at the last meeting, a treatise upon colors and dyeing, of which the following is a summary:

When any colored bodies that have been properly separated, (whether dyeing ingredients in mass, or in powder, or even threads used in tapestry,) are mixed in proper proportions, the result of the mixture, if it do not reflect the rays of white at all, or if it reflect them but a little, will be black, but if it reflect them to any great extent, then it will be a simple grey.

This principle, together with the fact that two slight finishing shades (*tons complémentaires*) are more perceptible as colored rays separately, than the very pale grey, which they produce when mixed, explains the result which is effected by the process of destroying a slight tinge of white, by the addition of a colored body. Thus, as M. Chevreul has affirmed, the process of obtaining black with finishing colors, and of increasing the whiteness of a slightly colored surface, by the addition of a color, is derived from the same principle.

The general result at which M. Chevreul has arrived is so much the more valuable, as by means

of the principle which he has laid down, it will be possible to destroy the effect of contrast, which has sometimes been found inconvenient when the object has been to have the designs colorless (*incolores*), that is to say, white, or very pale grey, upon a colored ground, instead of their being the same color as the ground. By mixing with the coloring matter of the design a little of the color of the ground, the effect of the finishing color will be neutralised. The result will be a simple grey, just as if the finishing color really existed in the coloring matter mixed with the white. The same thing may be done with designs in black upon a colored ground.

M. DIEFFENBACH communicated to the academy three cases of the cure of strabismus (squinting) by dividing one of the muscles of the eye; and M. Arago promised to explain the theory of an instrument invented by Woollaston for remedying this defect.

M. DUPASQUIER, Professor of chemistry at Lyons, presented to the Academy at their last meeting a treatise upon potable waters. Many of his conclusions are opposed to the opinions generally received upon this subject. He maintains

1.—That the salubrity of potable waters is not in exact proportion to their degree of purity; and that the purest waters are frequently not the most healthy.

2.—That the idea hitherto entertained of all calcareous salts being injurious in potable waters is erroneous, at least in regard to carbonate of lime, which, when reduced to a bicarbonate, exerts a wholesome action upon water as a drink.

3.—That a uniform temperature in potable waters is at least as important a consideration as their chemical composition.

4.—That the general opinion that all calcareous salts decompose soap, and make water hard and scienitic, is only true of salts that are directly soluble in water, such as sulphate of lime, chloride of calcium, and azotate of lime.

5.—That carbonate of lime, dissolved in potable waters, by means of an excess of carbonic acid, does not decompose soap, and does not, like other salts of lime, cause the formation of lumps of calcareous soap, even when at its maximum of quantity.

6.—That notwithstanding the solution in water of a quantity of carbonate of lime, six times as much as that found in potable waters which contain the most of this carbonate, it will still dissolve soap without forming lumps.

7.—That carbonate of lime does not decompose soap, except it be found in the same proportion as in certain mineral waters; the fountain of Saint Alyre, in Auvergne, for instance, which keeps in solution eight or nine times more of this salt than water from ordinary springs.

8.—That as the purest waters are not necessarily the most wholesome, so neither are they the best for manufacturing purposes.

9.—That waters in which there are least calcareous salts, and which are good for softening silk, are not therefore the best for dyeing; and that the use of water from calcareous springs has the best effect with regard to the lustre and durability of the colors, and produces a saving in extracting the coloring matter, which the dyers of Lyons estimate at one fifth.

10.—That, lastly, the remarkable effect attributed by the Lyoneese dyers to the generality of calcareous salts, is due only to one of these saline compounds, which exist naturally in solution in spring and river waters, and that repeated experiments have proved that sulphate of lime, chloride of calcium, and sulphate of magnesia, are almost inert as regards dyeing ingredients, and that the active principle in the solution of the coloring matter is almost exclusively confined to the carbonate of lime.

STATISTICS.—PORT OF MARSEILLES.

From the official documents just published, we collect the following statement of the foreign trade

of this port during the year 1839. There have arrived at Marseilles 3,374 vessels, of which 1,290 were French, and 2,084 foreign; carrying freight to the amount of 467,306 tons, being 169 vessels and 16,240 tons more than in 1838.

The foreign trade of the kingdom for 1839, in French bottoms, amounted to about 900,000 tons, including imports and exports; to this Marseilles contributed 321,632 tons, being one-third of the whole, and nearly 30,000 tons more than in 1838.

The imports and exports of the port of Marseilles in foreign bottoms amounted to 592,868 tons, being 28,000 tons more than in 1838.

The number of vessels, exclusively French, employed in the colonial import trade, was 156, having a freight of 32,851 tons, being an increase over 1838 of 40 vessels and 5,000 tons. The export trade remained nearly stationary, being 105 vessels and 21,997 tons in 1839, and 108 vessels and 21,157 tons in 1838.

The coasting trade in 1838 shows, arrivals 239,579 tons, departures 280,845 tons; in 1839, arrivals 271,697 tons, departures 273,284 tons.

In 1838 from the cod fisheries there arrived 63 vessels, with a freight of 10,413 tons; and 75 vessels with a freight of 11,284 tons in 1839.

The whole increase in the trade of the port of Marseilles for the year 1839 is, arrivals 367 vessels, with a burden of 54,220 tons; departures 118 vessels, with a burden of 32,463 tons.

GERMANY.

SCIENTIFIC MEETING AT PYRMONT IN WESTPHALIA.

(Continued from No. 22.)

On the following afternoon we visited the Schellenberg, or mountain of bells, to which are attached many historical recollections. We set out, to the number of sixty, some on foot, and some on horses, asses, or mules. The mountain is exceedingly steep, but a winding path conducted us to the summit without much fatigue. At the foot of a small ruined tower, the only remains of a fortress built by Charlemagne, we found a rustic booth, composed of boughs, which had been hastily erected for the reception of the numerous travellers who flocked from all parts, and who could here refresh themselves with coffee, and pipes or cigars. To consider tobacco as a refreshment may appear to some absurd, but I believe the Germans, like the Turks, look upon smoking to be as good as food; and in fact the narcotic quality of the tobacco does, in some degree, allay the cravings of the appetite.

Followed by my faithful Achates, the surgeon of Heidelberg, I ascended the ruined tower, from whence we had a most magnificent panoramic view. At our feet lay Pyrmont, with its long shady walk, and gay roofs of red tiles; a little further off appeared the small Prussian village of Liidge, surrounded by the steeple of its gothic church, which is of equal antiquity with the tower on which we stood; still further were seen the beautiful forests of Lippe Detmold; and here and there salt springs, with their dark enclosures of fagot wood, through which the water is continually oozing; and a chain of low mountains, covered with trees whose leaves had not yet fallen a sacrifice to the winds of autumn, formed in the distance a dark grey boundary to the whole prospect, which was enlightened and embellished by varied tints from the golden rays of the setting sun. The rapid approach of night warned us to depart. We dismissed our horses and mules, and descended on foot by the most direct path, sometimes with an involuntary speed, that caused us afterwards much amusement.

We next visited the baths of Pyrmont, which are not very different from those of Baden, Wiesbaden, and Spa. The water used in them contains a large proportion of carbonic acid, of salt of steel, and marine salt. They excite a kind of general irritation and pricking of the skin, and are famous for their effect upon persons of weak health, whose

lymphatic system is out of order. The water is moved, and kept at a uniform temperature by a sort of hollow stick, with a small thermometer fastened to the upper part of it. This thermometer is dipped in the water as it rises and falls, and thus the degree of heat is ascertained, and the bath kept at any given temperature. The gazbad or gas bath is much more remarkable than the ferruginous baths. A wooden pavilion is fixed upon an octagonal stone basin. Into this pavilion you enter by means of a step ladder, and in the centre of it is an elastic pipe, communicating with the basin below; to the pipe is attached a kind of copper cone full of holes, something like the nose of a watering pot; and through this cone the carbonic acid gas escapes. The pipe is held to any part of the body which is to be bathed with the gas, the taste of which is like that in the grotto of Dunst.

The pavilion was taken down, that we might see the gaseous spring, the appearance of which is singular enough. The gas rises from the bottom of the water in great quantity, and with extraordinary force, in bubbles as large as a child's head, and the water, except that there is no steam, looks as if it were boiling. The stones inside the basin are covered with a yellowish coat, composed chiefly of oxide of iron, deposited by the evaporation of the acid. Near the gazbad is the principal ferruginous spring which supplies the baths; it has the astringent taste of ink, and is esteemed excellent, both as a tonic and aperient. Dr. Garnier, of Pyrmont, analysed this spring, and found in it 16 different salts.

We were afterwards invited by Professor Brände, in the name of his sovereign, to visit the baths, rocks, curiosities, and monuments in the territories of the Prince of Lippe, which are a few leagues from Pyrmont. We travelled thither in enormous chariots, dignified with the name of omnibuses, drawn each by four horses decked with garlands of oak; and we finished a pleasant day's excursion by dining with the Prince in the Castle of Meinberg, where all was hospitality and good humor, heightened not a little by the gaping astonishment of the peasants who filled the galleries, to stare upon the assembled naturalists, and to convince themselves with their own eyes that they ate, drank, talked, and laughed exactly like other men.

It is impossible to behold a more imposing sight than the rocks which are so well known in Germany by the name of Eckstein, or Corner Stones. These three gigantic masses of stone, which witnessed the defeat of Varus, and the liberation of the country, might have exclaimed to us, in the words addressed by Bonaparte to his army, "Naturalists! from the summit of these rocks 40 centuries are looking down upon you."

At length the day of departure arrived. After fixing on Erlangen, in Bavaria, as the place of our meeting in 1840, the meeting of 1839 was closed by a suitable discourse from M. Noggerath, which was received with three cheers, and thus we bade adieu to the kind inhabitants of Pyrmont.

LOUTET.

BELGIUM.

POST OFFICE.

The following letter has been addressed by an English traveller to one of the leading journals of Belgium, the *Fanal*. The subject must be highly interesting to every person who has any correspondence with Flanders and the adjacent German states.

To the Editor of the *Fanal*.

SIR,—As a foreigner, it is very possible that I am acquainted with those reasons of state, which may be opposed to what I consider so useful, but I must own that my astonishment was great, when, on my arrival in this country, I found that the post for England left only three times a week. The commercial relations between the two countries

appeared to me to be of sufficient importance to require a daily communication; and I venture to hope that it is the inclination, no less than the interest, of Belgium to promote by all possible means a constant intercourse with a nation that is her natural ally, and whose character and institutions are so similar to her own. The great number of English dwelling amongst you is an additional reason why every facility should be afforded to the correspondence with England; and it must not be forgotten that the greater part of the letters which pass between Germany and the states bordering on the Rhine, and Great Britain, traverse Belgium. Notwithstanding all this, and the example of France, where, in the post-office department, the convenience of every body is so much and so constantly consulted, this important branch of the public service continues, as it were, paralysed in Belgium. Can it be that some secondary political consideration keeps it in this state so little flattering to the nation?

It was but the other day, that the minister of public works spoke with a laudable pride of the rank occupied by Belgium among industrial nations, owing to the prompt construction and extent of her railroads. What a contrast do they present to your post-office department! The only mail at all worthy of the age in which we live is that between Brussels and Paris; and this superiority is entirely due to the French *Estafette*, a circumstance which renders the general apathy among yourselves on the subject the more striking.

The distance between Paris and London is 103 post leagues; between Brussels and London 85 post leagues, 35 of which are travelled by railway, yet the letters from Brussels to London are not conveyed in less time than those from Paris, besides which, the charge for English letters is proportionably much greater in Belgium than in France, and in the former country they must still be partially post paid, an arrangement that has been found to give unnecessary trouble, both to the writer and his correspondent.

I cannot for a moment imagine that the English government, which is just now making such a bold and philanthropic experiment, by substituting for the former enormous charges a low and uniform rate of postage, would be opposed to improvements in her post-office arrangements with Belgium; neither can I believe that your own administration would be deterred by the probable expense of these improvements, since in order to have a daily communication between Brussels and London, nothing more would be necessary than to increase the number of steam-boats between Ostend and Dover from four to seven.

This question is connected with the general one of the rate of postage; and I cannot but think that it will not be long before the Belgian government turns its attention to the possibility of reconciling the interests of the exchequer with those of commerce and social improvement, by a great abatement of the tax which now so injuriously restrains all written communications, whether emanating from trade or literature, from friendship or science. Your railroads sufficiently demonstrate that a low scale of charges is very far from injuring the financial prosperity of any establishment; and this should induce your statesmen to introduce the same system into your post-office department. No country can be better adapted than Belgium, with its masses of population, and multifarious industry, to require such encouragement from its rulers.

I have the honor to be, &c.,
Brussels. AN ENGLISH TRAVELLER.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

A NEW RAILWAY is projected from Gloucester into the coal districts of the Forest of Dean, which, if carried into effect, will materially benefit both Gloucester and Cheltenham, connected together as these two places will be in the course of a few months by the Cheltenham and Great Western line. Captain Moorsom, the able engineer of the Gloucester and Birmingham Railway, is, we believe, at present en-

gaged in making a survey of the country through which it is proposed the line alluded to shall pass. Any undertaking such as this, if perfected, could not fail of reducing the price of coal in Cheltenham very considerably.—*Cheltenham Looker-on*.

THE PORT DYNLLAEN LINE.—The directors of the Worcester Chamber of Commerce met this afternoon, in the Guildhall, to consider the steps which have already been taken respecting the projected line of railway between this city and Port Dynllaen, in North Wales. Various communications were read by the secretary, Mr. J. Tymbs, from his father, H. B. Tymbs, Esq., and Captain Winnington, addressed to the chairman, detailing the parliamentary procedure in the case, managed by the gallant member on behalf of the chamber, and the result of which was, that on Tuesday the house agreed to an address to the Queen, praying that the merits of the Worcester line might be referred to the commissioners appointed to report on the most eligible line between London and Dublin. Notwithstanding this partial success, Mr. Tymbs's letter from London gave a very disheartening look to the undertaking, as it appeared that he and Mr. Varden, the engineer, who was in London on business of the chamber, were told by parties who pretend to know the whole state of the case, that admitting the Worcester and Port Dynllaen line to be decidedly preferable to all others, there were insuperable objections to the port itself:—1st. A stream fell into it which in course of time will produce shoal water. 2nd. There was a shifting bank off the port, which would oblige packets occasionally to run up as far as Holyhead, and thus add greatly to the distance. 3d. The rocks were of so friable a nature, that in constructing a harbour they would have to be cased with stone. 4th. Whatever pier may be formed at Dynllaen, it will occasionally be exposed to north-westers. Notwithstanding these objections, however, which were entirely hearsay, and generally discredited on the authority of the Railway Commissioners' Report, it was unanimously resolved to persevere, and on the motion of C. A. Helm, Esq., seconded by J. M. Allcroft, Esq., Mr. Varden was instructed to go on with the construction of the sectional surveys and other documents, which must be lodged with the commissioners by the 1st of March—relying on this step being sanctioned by the general meeting of the chamber, to be held on the 14th instant. Mr. Varden stated the cost of these surveys would be about £150. The thanks of the directors were then most cordially voted, on the motion of H. B. Tymbs, Esq., seconded by Mr. J. Hood, to Captain Winnington, and Mr. Bailey, jun., for their valuable services in this matter.—*Worcester Herald, Friday*.

PROGRESS OF THE WORKS ON THE CHESTER AND BIRKENHEAD RAILWAY.—The most important and expensive works required in the formation of this line of railway are fast approaching towards completion. The earthwork is far advanced, and had it not been for the unparalleled wetness of the last six months, the excavations and embankments would have been already finished; but, although this cause has retarded the earthwork, the weather has been highly favorable for prosecuting the brickwork and masonry, and little is now left undone in that department, except a few occupation bridges for the use of the landowners. The principal structure on the line is the viaduct over the Ellesmere and Chester Canal at Moston, which consists of eleven arches. The centre one is what is called a skew arch, being built at an angle of 45 degrees with the line of the canal. The crown of the arch is 36 feet above the surface of the water in the canal, and measures 52 feet in span. The other ten land arches are 20 feet span, and the highest is 44 feet above the level of the ground. The foundation for this erection was very bad, being what is commonly called quicksand, and subject to be flooded by the "Hundred Brook." It therefore required making good by piling, planking, covering with concrete, and invert arches between the piers. These piers are now all built, and the arches turned, and the parapet walls are all that are required to complete the structure. The centerings of the smaller arches

were removed as fast as the arches were closed, and that of the large arch, after remaining a few weeks, was struck ten days ago. It must be gratifying to the proprietors, and equally creditable to the builder, to learn that in a work of such magnitude, not the least appreciable subsidence has taken place. The next step, we understand, will be to commence the erection of booking offices and coach sheds at the terminus. It is probable that these may be completed simultaneous with the opening of the line. In the meantime, however, the business of the company may proceed with temporary stations, which will be quite sufficient during the summer months. The object ought, and we trust will be, to open the line as soon as possible; and the public, if this accommodation is afforded them, will gladly put up, for a time at least, with any little inconveniences which may arise from the want of waiting rooms, and other luxuries of the sort, which railway companies are in the habit of affording them.—*Liverpool Standard*.

The DIRECTORS of the MANCHESTER and LEEDS RAILWAY have just made their monthly inspection of the works, which are progressing most rapidly. Some idea of the exertions used to push forward the undertaking, may be formed from the fact, that Mr. John Stephenson, the contractor for the great tunnel, which is far advanced towards completion, has now, in full operation, on that contract alone, 1,253 men, 54 horses, and 14 steam engines; and that the daily consumption of bricks is from 51,000 to 60,000.—*Railway Times*.

SALISBURY RAILROAD.—At a public meeting held at the council chamber on Monday last (the mayor presiding), it was resolved that a railway should be formed from Salisbury to a place called Hook-pit, which will considerably shorten the distance from Salisbury to London. The estimated cost, including every expense, is £600,000, which is to be met by 24,000 shares of £25 each; up to the present period 12,600 shares are taken, and the committee are actively engaged to procure subscribers to make good the deficiency, which will no doubt be very soon procured.

RAILWAYS IN ENGLAND.—There are now in England 682½ miles of railway completed and in operation, and it is expected that in the course of the present year 630½ miles additional will be completed, making altogether 1,313 miles of railway, which will be brought into operation before the end of 1840. There will then remain for subsequent completion in England 413 miles, the entire number of miles for which Railway Acts have been passed being 1,726 miles. The amount to be raised by calls for railway purposes during the present year is calculated to be £5,908,500, a sum considerably less than was called up during the past year of depression and suffering. The amount remaining to be called for, after 1840, is £3,865,000, which will complete the capital authorized to be raised for railways in England by Acts of Parliament passed up to the close of last session.

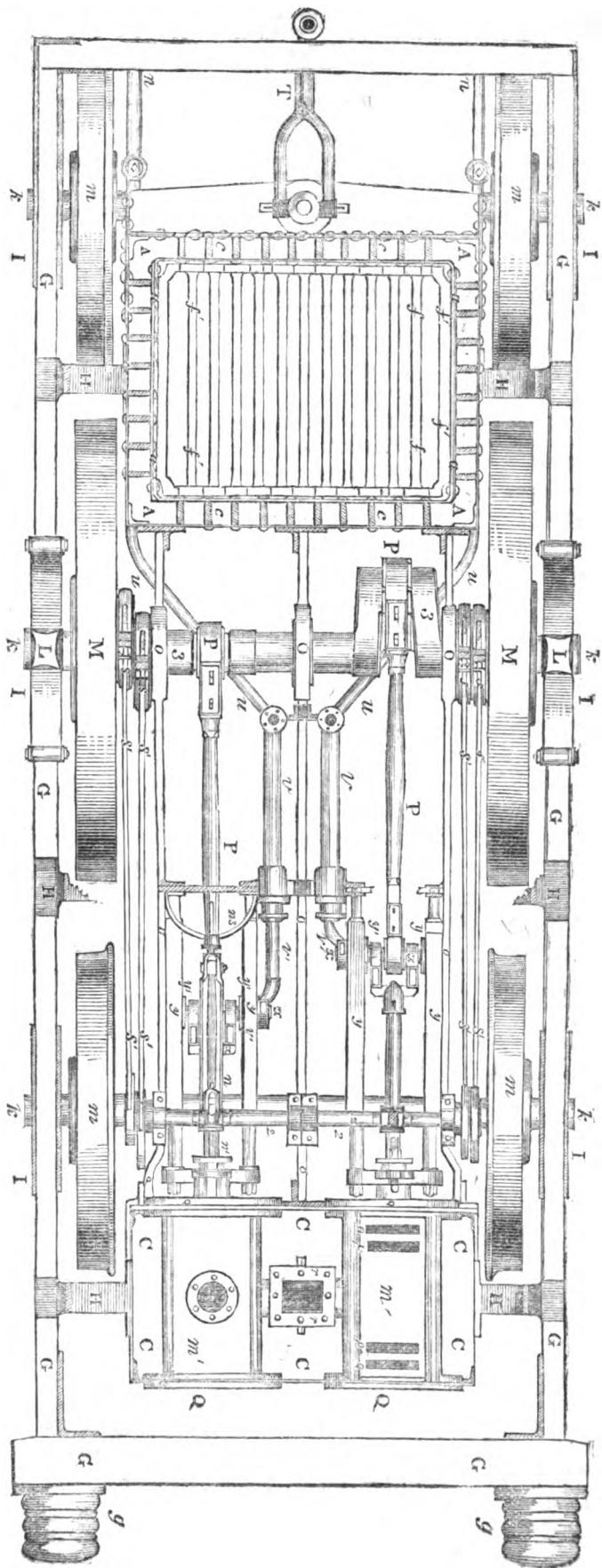
RAILROADS IN FRANCE.—The French Railroad Commission, presided at by the Minister, has decided—1st. That the Government should subscribe for two-fifths of the capital of the Orleans Railroad, that is, take shares for 16,000,000 francs. 2d. That the guarantee of interest demanded by the Strasbourg Railroad Company should be refused. 3d. That the Government should undertake and execute the first twenty-two leagues of the railroad from Paris to Belgium (that is, as far as Cecil), granting free and gratuitous passage so far to the company that would continue the line to the Belgian frontier. These are important resolves.

FRANCE.—There has been a brisk demand for shares this week, attributable to a project for procuring the intervention of the public, by means of a subscription in aid of the undertakings which require assistance, and also to a demand to be released from several weighty imposts. The following were the prices:—St. Germain, 575, 625, and firm at 622f. 50c.; Versailles (right bank), 500, 540 and 535f.; Versailles (left bank), 357f. 50c., 382f. 50c., and 380f.; Orleans, 460f. to 462f. 50c.; Strasbourg and Basle, 346f. 25c., 368f. 75c., and 367f. 50c.; Mulhouse and Thann, 420 to 430.

IMPROVEMENTS IN LOCOMOTIVES:

ONE OF THE LOCOMOTIVE ENGINES ON THE BELGIAN RAILROAD.

No. 3.—THE PLAN.



EXPLANATORY REFERENCES.

- v v. The Feed pumps, made of brass.
 v l v l. The plungers, made of iron, attached by a strap gib and cotter to the end
 of the cross-head.
 x x. The cross-head, attached to the end of the piston rod by means of a cotter.
 y y y y. The guide-plates, made of steel, having a steel block, y 1, accurately fitted
 to slide between each of them, and attached to the cross-head, to preserve the rectilinear
 motion of the piston.
 z z. The way-shaft.
 3 3. The crank axle.

ERRATUM in our last.—In the reference given under the letters c c. (page 102, 48 lines from the bottom) for *coupons read tapped*; and for *fire-bars read fire-bars*.

GREAT WESTERN ELECTRIC TELEGRAPH.—On Saturday last the following members of the select committee of the House of Commons on railways inspected, by appointment, the Electro-Galvanic Telegraph, at the Great Western Railway station, at Paddington, which extends from thence to West Drayton:—The Earl of Lincoln, Viscount Sandon, Sir Harry Verney, Bart., Lord Granville Somerset, Mr. Hume, Mr. Lock, and Mr. Greene. There were also present Sir E. H. Alderson, Mr. Russell, the chairman of the company, Sir J. Clark, and several gentlemen connected with mechanical and scientific pursuits. Messrs. Cooke and Wheatstone (the inventors) were in attendance, and explained to the committee the principle of the working of the telegraph, and its application to the purposes of government and commerce, as well as railways. The party was engaged upwards of two hours in inspecting its mechanism and working, and appeared to attach great importance to an invention, which seems destined to produce great changes in our internal communications, by its rapid and almost instantaneous agency. The Blackwall Railway Company have just adopted the Electro-Galvanic Telegraph on their line, which is now being laid down on an improved plan, adapted to the method of working the trains by stationary engines.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
Bogota	Denmark	Nevis
Bahamas	Dominica	New Brunswick
Barbadoes	France	Newfoundland
Berbice	Gibraltar	Nova Scotia
Bermuda	Greece	Quebec
Brazils	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Heligoland	St. Lucia
Caraccas	Honduras	St. Vincent's
Cartagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Columbia	Laguna	Trinidad
Corfu	Malta	Zante
Cuxhaven		

It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of twopence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 O'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsmen, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS I to 7, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"Electro-magnetism applied to navigation."—By the courtesy of a correspondent, we are enabled to inform a querist in our Paper of last week, that PROFESSOR JACOBI is the individual in question; he is now experimenting on the subject above alluded to.

"Amicus." 1st.—If your invention is substantively dissimilar to that, included in the patent alluded to, a patent for it would be valid.

2nd.—From various motives; sometimes, because the patentee never believed that it was a new invention, in other instances, because he has subsequently discovered that it was not new, and in others, because he is not prepared to specify it.

3rd.—He cannot claim the patent right to that which is not included in his specification.

4th.—Priority of date has the priority at law.

- " T. Jordan."—Only by a disclaimer or alteration of the objectionable portion of the specification.
- " K. Z."—It is impossible to answer your letter without knowing the particulars of the invention.
- " Shareholder."—There can be no doubt that under the circumstances, the patent is held in trust for more than twelve persons, and therefore that it has become void.
- " George H."—The "gross fraud" would avoid the contract.
- " J. Moore;" " A. D. S."—We have written these correspondents by post, as desired.
- " W." Swansea.—We will endeavor to oblige our correspondent in an early number.
- A heavy pressure of more immediately-important matter, compels us to leave out the continuation of "the Critics Criticised," and other interesting articles.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSOON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, FEBRUARY 22, 1840.

The partial improvement in trade in the manufacturing districts, which last week was manifested, has disappeared, and the reports from the North are again unfavorable. It would appear, however, from the notice of the Chancellor of the Exchequer to issue new Exchequer bills at the old rate, that it is anticipated money will shortly become more abundant, so as to enable the government to complete the proposed financial arrangement.

The Parliamentary proceedings of the past week, have not been of a character to require much comment from us. The chief matter of interest connected with the internal welfare of the country, has been the formation of regulations for the appointment of committees on

private bills, for the purpose of remedying, as far as possible, the evils of the system, which left those important measures to be decided rather by local and personal interests than by a regard to the general wants of the community. By the proposed regulations, a committee of selection, consisting of three members, is to be appointed, by whom the members on the respective committees are to be selected, and each member is required to make a declaration, among other things, that he has no personal interest in the bill, and that he will not vote on any question without having duly heard and paid attention to the evidence. It is a notorious fact, that it was formerly usual for members on private bills to rush into the committee-room when a division was about to take place, and vote without having heard a word of the evidence.

The questions of interest to trade and manufacturers, which we have before noticed as being about to be brought before the House of Commons, have been deferred, the attention of the House having been almost nightly occupied with the question of privilege.

PHILOSOPHY OF THE MECHANICAL POWERS.

No. 3.—THE WHEEL AND AXLE, AND THE PULLEY.

The wheel and axle so manifestly resembles the lever, that it would be a waste of time to explain the principle of its action to our readers. It is merely a lever bar fixed to a revolving point; the weight, or resistance to be overcome, being placed between the moving power and the fulcrum, and therefore it acts as a lever of the second kind. The power gained is in the ratio that the length of the arm to which the moving force is applied bears to the radius of the axle round which the rope is wound.

The principle on which the mechanical advantage of the pulley depends, is not so clear, and the consideration of it has given rise to much discussion; it will, therefore, require to be examined at more length, but we trust we shall be able to prove that the pulley, like the wheel and axle, is only a modification of the lever. This consideration of the properties of the pulley is strongly denied by some writers, but they seem to have no very tangible theory to substitute for the one they reject; and it would appear, indeed, that they mistake the effects of the action of the pulley for its cause.

In a very popular treatise on Mechanics,*

* Lardner's Cabinet Cyclopaedia—“Mechanics.”

written by an author of much celebrity, the following mystical account is given as an explanation of the mechanical properties of the pulley. "From the definition of a flexible cord, it follows, that its tension, or the force by which it is stretched throughout its entire length, must be uniform. From this principle, and this alone, all the mechanical properties of the pulley may be derived." Again, in another place: "The whole mechanical efficacy of this machine depends on the qualities of the cord, and not on those of the block and sheave, which are only introduced to remove the accidental effects of stiffness and friction." It would appear, from this explanation, that some latent virtue is supposed to reside in the cord, by the mere stretching of which, the mechanical advantages of the pulley are produced; but it is not stated in what manner this effect is accomplished, nor is any reason assigned why a mechanical advantage is not gained by the tension of a cord on a fixed pulley, if the tension can produce mechanical advantages in other arrangements of the machine. All difficulty and needless mystification will, however, vanish, if we consider the moveable pulley as a lever of the second kind, in which the weight acts between the power and the fulcrum.

The form of the pulley is not material to its mechanical properties. A circular wheel, with a groove for the cord to work in, has been generally adopted, because it presents less resistance from friction than any other form, but it may be a mere point, or it may be a square, instead of a circular block. The illustration of the action of the pulley will, perhaps, be more clear if we consider it as a square block with a pivot in its centre.

Let A. B. be such a pulley, fixed to the

this case being fixed by the superior weight of W., the pivot C. acts as the fulcrum, in the same manner as the pivot in a scale beam; and as each arm of the dotted lever A. B. is of equal length, there is no mechanical advantage gained, and the two weights are in equilibrium.

Suppose the large weight W. to be diminished to rather less than the united weights of I. and H., the united force of those weights would raise W. from the ground, but there would not be any gain of mechanical power. If the end of the cord F., however, be fixed to the beam at the top, a different action takes place, and a mechanical power is gained, which would enable the single weight H. to raise the same weight which before required the united forces of H. and I. to lift. The pivot C., which, in the first instance, acted as the fulcrum, would now sustain the weight to be raised, and the fulcrum would be moved to A. The square block has thus become a lever of the second kind; and as the point B., where the power is supposed to be exerted, is twice as distant from the fulcrum A. as the point C., whence the weight depends, the mechanical advantage of such a lever is two-fold, and a weight at H. would therefore balance a weight twice as heavy placed at W.

We have in this illustration, for the sake of clearness, supposed the acting and resisting forces to be exerted at the points A. B. and C., which are in a straight line, at right angles to the moving and resisting forces; but it is evident that the principal forces acting on the cord will be exerted at the bottom of the square block. The effect, however, will be exactly the same, whether they be considered as acting in a straight line, or at any other points equally distant, horizontally, from the centre C.

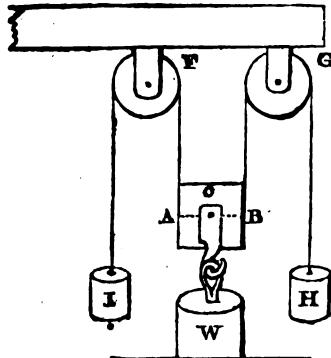
Though the fixed pulley does not afford any mechanical advantage when the power and the resistance to be overcome act separately from each other, yet, when the power is employed in moving itself, a mechanical advantage is obtained by the fixed pulley equal to that of the moveable pulley when the two forces act apart. Thus, if a man seated in a wheel-chair pull at a rope that is fastened to it and passes round a fixed pulley, he will draw himself towards the pulley with the exertion of half the strength it would require to pull the chair to the same point by a single rope. The same advantage would be gained in raising himself perpendicularly, if a rope fastened to his body passed round an elevated pulley, and the other end descended to his hand.

In this way, a man may raise himself to the top of a precipice, or lower himself into a well, with great ease; but the quantity of rope he must pull in, is twice the length of the space through which he moves.

It may be thought, that the mechanical advantage obtained by the pulley in this case, militates against the theory we have endeavored to establish; for the fixed pulley, usually employed, as we have seen, consists of an equipoising lever, in which the weight and the power act at equal distances from the pivot. It may, therefore, be objected, that if any mechanical advantage is gained by such a pulley, it must depend on some other principle than that of the lever. We shall, however, be able to show, by examining the nature of the action of the fixed pulley in such a case, that the power gained, even then, is derived from the lever.

In our notice of the three kinds of lever, last week, we alluded to the rowing of a boat as affording an instance in which the fulcrum, the weight, and the power, were all in motion at the same time, and the difficulty of determining in such case with what kind of lever the oar should be classed. Now, in the case of a man raising himself by means of a rope fastened to his body, and passing over an elevated fixed pulley, a similar movement of the three points of the lever occurs. That part of the man's body to which the cord is fastened, may be regarded as the fulcrum; his hand as the point where the power is applied; and the centre of gravity of his body as the point where the weight to be moved exerts its resistance. This position of the three points being assumed, the rationale of the advantage gained by the pulley will be easily understood.

When the man pulls at the cord, he raises his body with the mechanical advantage of a lever of the second kind; and the power being at twice the distance of the weight from the fulcrum, the mechanical gain is two-fold. This will become very evident, if we suppose the man to be seated astride the middle of a pole, the ends of which are fastened by cords to fixed points, instead of passing over a pulley. It would then be seen, at once, that when he first pulled the cord he would act with a two-fold mechanical advantage. As he continued to raise himself, however, the end of the pole at which the power was applied, would gradually be brought over the centre of gravity, and the fulcrum would be thrown below it, until the direction of the power, the centre of gravity, and the fulcrum, would be in the



large weight W., with a cord passing under it, and round the two fixed pulleys F. and G.; the weights I. and H. fixed at the ends of the cord, being equal. The square pulley A. B. in

same perpendicular line, and all mechanical advantage would therefore be lost. The weight would in this case be thrown more and more on the point where the power acts, and it would be diminished in the same proportion on the fulcrum, until the former would sustain all the weight, and the latter would sustain none. But when the rope passes round a pulley, which permits the fulcrum to adjust the balance by rising as the pressure on it diminishes, the equilibrium is in this manner constantly maintained, and the centre of gravity is kept at an equal distance from the fulcrum and the power.

It thus appears, from the explanation we have given, that the mechanical advantage gained when a pulley is employed in raising the moving power, is not derived from the pulley, nor from the tension of the rope, but that it is caused by the positions of the weight, the power, and the point of resistance; the use of the pulley being merely to keep those forces in the same relative positions. We are not aware that the action of a fixed pulley when thus employed, has been previously attempted to be explained on this principle, and it will be perceived that, so far from refuting the opinion that the mechanical advantages of the pulley depend on the lever, it affords the strongest confirmation of that theory.

THE ULTIMATE ATOMS OF LIQUIDS AND GASES.

In a recent number of the *Philosophical Magazine*, there appeared an article from Mr. Jeffreys, describing a series of experiments he had made in India, with a view to determine the relative sizes of the ultimate atoms of liquids and carbonic acid gas. The inference he draws from those experiments is the somewhat startling one, that the ultimate atoms of gases are, contrary to previously entertained opinions, larger than those of liquids, and even larger than the atoms of the alkalies. We have lately been engaged in a series of experiments similar to those of Mr. Jeffreys, and though the results were in effect the same, the inference we draw from them materially differs from his; and as it is of great importance that no error should be promulgated, on authority, on a fundamental question like this, without contradiction, we think it advisable to point out the objections to Mr. Jeffreys's theory.

The following is an outline of the experiments performed by Mr. Jeffreys. He procured several strong earthenware

bottles, burnt to different degrees of hardness, which he filled with an alkaline solution impregnated with carbonic acid gas, under a pressure of ten atmospheres*. In those bottles which were most porous, the gas escaped rapidly, whilst most of the liquid remained in the bottle. The bottles that were burnt hard were impermeable to gas or liquid. Those bottles which had been subjected to a medium degree of heat, permitted the liquid to escape through their pores, whilst the gas was retained; and when the bottles were opened some time afterwards, the gas rushed out with a loud report, the bottles being empty of all liquid. The outside of the bottles were also coated with an alkaline efflorescence, which showed, clearly enough, that the alkali had escaped, with the water in which it was dissolved, through the pores that refused a passage to the gas. From this experiment, Mr. Jeffreys concludes that the ultimate atoms of carbonic acid gas, and indeed of all permanently elastic gases, are either larger *per se* than those of liquids, or that the atoms of the gas and the atmosphere of repulsion which surrounds each, collectively, are larger.

The first experiment, in which the gas escaped, and most of the water was retained in the porous bottles, would, it may be conceived, have led Mr. Jeffreys to suspect that his deductions were erroneous; but where an opinion is once adopted, facts, however opposed to it they may appear, are easily made to bend in conformity with the preconceived idea. The following is the unsatisfactory explanation, therefore, which he gives of the first experiment. "In this case, though the pores were free enough to give passage both to the water and to the gas, the density was still sufficient to detain the water during the time the gas kept extricating itself, and constantly occupying the pores of the ware to the exclusion of those of the water. Though the chief force, the mechanical one, acted on both fluids, a little might turn the scale in favor of the relief taking place by a departure of the one and not of the other."

The experiments in which we were engaged, were made with larger vessels, and were persecuted with a different object from those we have mentioned, but the results were the same; viz., that earthenware vessels may be made, perfectly air tight and yet pervious to liquids. We conceive, however, that this fact has no

bearing on the question of the comparative sizes of the atoms of liquids and gases; the circumstances of water oozing through the pores that will not admit the passage of air, depends, in our opinion, on the chemical attractions subsisting between the aluminous compound of the vessel and the water, and not on the size of the ultimate atoms of the air and liquid. It is well known, that many substances are pervious to some liquids and impervious to others, but this cannot be regarded as a test of the comparative sizes of the ultimate atoms of those liquids. The electric fluid will pass instantaneously through any thickness of metal, whilst a few folds of silk will effectually stop its progress, and yet through the latter, water can easily penetrate. Surely, it will not be inferred from this circumstance, that the electric fluid is more dense than water.

There is another fact, however, that has been entirely overlooked, which is, that in all cases wherein it is known that *mechanical* resistance alone exists to the passage of air and liquids, the former will always penetrate, whilst the latter is retained; and where both are permitted to pass through the same aperture, the quantity of air that escapes is far greater than the quantity of water; which would not be the case if the atoms of air were larger than those of the liquid.

We have frequently noticed, for instance, in our experiments with a vessel containing water impregnated with three or four atmospheres of carbonic acid gas, to which vessel a pressure gauge was attached, that the water would be forced out of a minute aperture in a metallic plate, in so small a jet, as to produce no sensible impression on the pressure gauge; but when the lower part of the vessel was turned upwards, to bring the gas to the aperture, the escape of gas was so rapid, that the mercury in the pressure gauge fell very perceptibly.

The inferences drawn by Mr. Jeffreys from one experiment, contradicted as it is by nearly all his others, having apparently received the sanction of eminent scientific men, by being inserted, without comment, in a work under their guidance, we have been induced to notice them. We shall always endeavor to detect and expose what we conceive to be fallacies in argument, or errors of inference, in scientific investigations; and the greater the authority by which any new dogma is supported, the more essential shall we consider it to examine with suspicion the arguments on which it rests; because, in proportion to the eminence

* Mr. Jeffreys does not mention whether the degree of pressure was ascertained by a pressure gauge, or was merely estimated from the quantity of gas forced into the solution. We suspect that some error exists on this point, as a porous earthenware bottle strong enough to bear a pressure of ten atmospheres must be very thick indeed.

of the source whence it emanates, will be the extent of its injurious influence if founded in error.

NEW INVENTIONS.

SUSPENSION RAILS APPLIED TO BUILDINGS FOR THE CONVEYANCE OF MATERIALS.

The art of building has made considerable progress of late years, but it still admits of improvement. If the durability of different materials, and their relative eligibility for particular purposes, open a wide field of investigation for the scientific and practical man, the best method of lifting, and conveying them, is neither less useful, nor less interesting. Amongst other recent inventions, is one by M. Adolphe Nepveu, the architect, and one of the most eminent contractors for public works in Paris. He has contrived a plan for conveying materials by means of suspension rails, which plan has been tried in a large building of masonry, and latterly in the wood yard, near the Rue Lafayette, where the whole apparatus may be seen in operation. A committee has been appointed by the Institute to examine it; and their report will, no doubt, be favorable. That which is particularly striking, is the simplicity and economy of the means employed; a sure harbinger of success in all new inventions, particularly in those relating to construction.

RAILWAYS—IMPORTANT INVENTION.

We copy the following paragraph, says the *Mining Journal*, from the *Sheffield Iris*, and, at the request of a correspondent, append a letter which has since been addressed to the editor of that paper, having reference to the invention:—

"We understand there will be placed upon this railway, in a few days, an engine patented by a gentleman in this town, which possesses many advantages over any other. All the six wheels are connected by a strap, either of hemp or leather, thereby presenting six points of adhesion or friction to the rails, instead of two, which will secure a uniformity of speed in all weather. It is expected to move double the weight, at the same velocity, to any other engine of the same weight and capacity of cylinder. It will also greatly diminish the expenses of repairing the road; for each of the engines now in use weighs, when the boiler is charged with water, twelve tons, nearly the whole of which, to ensure progressive motion, is placed upon the two driving wheels. But the patent engine, having the weight divided equally between each wheel (every one being a driver), it is obvious that the one engine is striking the rail with a twelve ton hammer, whilst the other is gently tapping it with four. It is not only great speed, but great regularity also, are expected from railways, both of which will be ensured by this invention. It will also acquire its speed, and be stopped, sooner than the other engine."

"Sir,—I have been much pleased with a paragraph copied from your paper by one of the London morning papers, headed 'Sheffield and Rotherham Railway,' and describing an improved engine with six wheels, each of which, by an ingenious connection, becomes a driver; thus presenting six points of adhesion (or fulcrum) to the rails instead of two; by which means it is expected to move double the weight at the same velocity as is effected by other engines of the same weight and capacity of cylinder.

"The great importance of such an invention as this is not to be overlooked, when we consider its application to railways of steeper gradients than the Sheffield and Rotherham; for instance, on the Sheffield, Ashton, and Manchester, where the resistance from gravity will be so much greater, and upon which, in consequence thereof, additional fulcrum becomes a great desideratum. The more

level railway will, undoubtedly, always have the advantage in working, over that which is not so level; but what I wish to show is, that the latter will be worked with as much advantage by the improved engine, as the former is at present by the common one.

"Thus, on the Sheffield, Ashton, and Manchester, the resistance upward will be—gravity, forty-two feet per mile; friction and resistance of air, thirty feet—total seventy-two feet per mile. And on the Sheffield and Rotherham—gravity, twelve feet per mile; friction and resistance of air, thirty feet—total forty-two feet per mile. The ratio of resistance, therefore, is as seventy-two to forty-two, while the ratio of improved fulcrum (or adhesive power) to common fulcrum is as three to one, and the expected ratio of effective (or motive) power two to one.

"It will be apparent, to all who are conversant with such matters, that this discovery will double, if not treble, the extent and usefulness of the railway system; and for that reason it gives real satisfaction to

AN ADVOCATE OF RAILWAYS.

BURSTING OF STEAM BOILERS.

Mr. Murray, in a recent lecture at the Mechanics' Institution, Birmingham, stated that the fearfully fatal cases of the *Earl Grey* steamer at Greenock, and the *Union* at Hull, had directed his particular attention to the inquiry as to the causes of these deplorable events. He differed entirely from the diversified solutions of the problem that had been given to the public; and ventured to state his individual opinion, as deduced from experiments, merely that it might be the means of affording some useful hints on a subject so deeply interesting and important to the community. Safety valves, he observed (as they were called), were merely a *misnomer*, and in the sudden extrication of a volume of highly elastic steam could be of little avail, while they afforded no adequate relief. There should, he believed, be always *two* safety valves. He mentioned a case where one of the valves of a boiler thus supplied acted freely, and the other was *gagged*. The latter phenomenon he did not think depended entirely on the ordinary pressure of the atmosphere, but had to do with some other principle; in proof of this, he cited the instance of a transatlantic steamer, where the *safety valve* was gagged, requiring the purchase of a crow bar to raise it, after the entire weights had been previously removed. Mr. Murray also considered that safety valves were much too contracted in their dimensions, and two safety valves would provide against the contingency referred to. The bursting of steam boilers was considered attributable to the sudden disengagement of highly elastic vapor or steam from the individual spot of the boiler against which a burst of flame might impinge; this might detach a portion of the calcareous incrustation at the bottom, and this extricated steam would dart like an arrow through the water, and strike that portion of the dome of the boiler immediately opposed. The *comparatively non-conduction, or slow conductivity of the water*, would not allow the suddenly evolved vapor to diffuse or expand, and thus press equally on the vault of the boiler: the safety valve in such an emergency would be useless, and he contended that the appearance of the roofs of the boilers thus destroyed entirely corroborated these views. In proof of his assertions, Mr. Murray referred to the *varied temperatures* that might be observed in a vessel of hot water; there was one temperature at the top, another in the centre, and another at the bottom, while there were others in various directions laterally. This was particularly remarkable when a piece of ice was dropped into a tumbler of water. Various substances modify ebullition, such as a chip of wood in the case of ether, and might suggest important and useful hints. In a glass vessel of water, where the flame impinged, the ebullition was consequently *per saltum*, and unequal; while a few metallic filings served the purpose of facilitating an equal diffusion and extrication of vapor. Mr. Murray considered

that the *prevention* of these accidents was as obvious as the application was easy—namely, the diffusion through the water in the steam boiler of copper wire.—*Midland Counties Herald*.

CONVERTING STONE INTO MARBLE.

A discovery has recently been made in Russia, of a method whereby the softest stones may be hardened, and have communicated to them the beauty, solidity, and even colors, of the rarest marbles.—*Athenaeum*.

RAILWAY TRAVELLING.

(FROM OUR BRUSSELS CORRESPONDENT.)

It is now some months since an invention of M. Aug. Van der Elst was laid before the public. This invention consists in a plan for a more rational system of curves upon railroads, which in their present state are very imperfect, and cause great additional expense. His plan is founded upon acknowledged mathematical principles, which are invariable; nothing is left to conjecture, and it seems to be as certain as it is simple. It is equally applicable to small and large curves on the same line, and enables a train to traverse curves, whether the radius be 300, 1000, or 2000 metres, without any more perceptible friction than would be experienced in a straight line:

The necessity of some improvement in this respect on railroads, had led to the expectation that the minister of public works would have directed a trial to be made of this plan; but no such direction has been given, notwithstanding the promises held out to M. Van der Elst. The administration of *ponts et chaussées* (bridges and roads) have often been accused of considering all improvements, which do not emanate from their own department, as unworthy of their attention; but it is scarcely credible that persons, to whom such important public interests are intrusted, would disregard real improvements, come from what source they may; and the minister of public works will surely not refuse to make inquiry into those which are now brought under his notice, and which are remarkable for their simplicity, and are based upon the laws of motion.

The plan of M. Van der Elst possesses all the advantages of that of M.M. Laignel and Stephenson, with great additional improvements. M. Stephenson's plan, which has been adopted on the Belgian railroads, is scarcely applicable to any curves whose radius does not exceed 1000 metres, and even then there is a very decided friction.

M. Van der Elst proposes a contrivance to augment or diminish, at pleasure, the conicalness of the present wheels, from one to two millimetres; and to retire the inside rail of the curve some few centimetres: and this he thinks will be sufficient to allow the construction of curves of a radius under 500 metres, to diminish considerably the wear and tear of rails and wheels, and to render railroads generally cheaper and more commodious; and considering the promised advantages of his plan, the trial which he claims at the hands of the minister of public works is surely due to him. And the sooner this claim is granted the better. His plan appears to remedy the inconveniences objected to that of M. Laignel and that of M. Stephenson. The former makes the curves too small for all lines where great speed is required, and the latter causes too much friction, because the train travels in the same manner on curves, as on a straight line.

One of the principal difficulties of railroads both with respect to economy and greater facility of locomotion, would thus be removed; and as the minister of public works cannot but wish that both these objects should be effected, it is to be hoped that he will investigate the merits of M. Van der Elst's invention without any further delay.

RAILWAY SYSTEM OF GREAT BRITAIN.

(Continued from our last.)

Having now completed our enumeration of all the railways for the forming of which acts have been procured, down to the conclusion of last session of Parliament, we shall, as promised, revert to those indicated in our progress as more important than the others, and briefly state such particulars of their history, as may convey some general ideas of the advancement and state of the whole.

The Liverpool and Manchester railway, as already observed, is 32 miles long, a fact in itself of much importance, as contrasted with the competing line of turnpike, which is five miles longer. It was opened through its whole extent in 1830. Had the experience now possessed by engineers and others, in reference to railway formation and management generally, been at that time existent, much expense, labor, and annoyance would have been avoided, but, as it is, the company has successively risen superior to all its disappointments and difficulties, and for some years past enjoyed a good return upon the vast sums it has expended. The road, tunnels, cuttings, embankments, &c., have cost £885,463; warehouses and stations, £248,518; locomotive engines, coaches, and wagons, £61,175; being in the whole, £1,195,156, or, in round numbers, £1,200,000. The tunnels are two in number, and, on account of their novelty, excited at the time great interest. The one is 300 yards long, with an inclination of 1 in 72; the other is 2,300 yards long, with an inclination of 1 in 48. There are two inclined planes on the road, which are considered permanent defects, and which require the help of additional powerful locomotives to surmount them. With these exceptions, the line is favorable both as to gradients and curvature. The steepest gradient, exclusive of the inclined planes mentioned, is 1 in 849. Some of the cuttings and embankments are stupendous, and the bridges, which are numerous both over and beneath the railway, are many of them fine specimens of architecture. Not the least remarkable of the special topographical features of the line, are the two mosses—called Parr and Chat Moss—which the railway traverses. These mosses were so fluid, that the materials used in forming the way through them sunk to the bottom; so that they are in truth intersected by embankments rising through their whole depth to the necessary height above their surface—exactly like a mole or jetty penetrating any portion of the sea. Besides its inclined planes, there is another serious evil connected with this railway, and with most of the others executed before then, and down to a later period, which is, the crossing on a level a number of the highways that intersect it, to the great inconvenience and danger of the public. Gates are by law ordered to be erected, and vigilant watch kept at all such crossings; but however efficient such an apparatus may be, many accidents must necessarily occur under the circumstances; while the confusion and mistakes attendant on frequent sudden stoppages, are causes of just complaint at all times, independent of degrees of danger or safety. On this account, Parliament has of late very properly made it a standing rule that no railroads, to be in future constructed, shall be allowed to cross in this manner any public thoroughfare, but shall be carried either over or under them by bridging. Nor is this any hardship on railway companies, since the cost of a bridge, executed at once, with its dependent cutting or embankment, would, in process of time, be far exceeded by the constant yearly maintenance of gates and watchmen.

There are two tracks, forming a double line, on this railway throughout. The rails are edge rails. On the clay and stone on which the road is formed, a two-foot thick layer of broken rock and sand is deposited, one foot's depth of it being underneath the sleepers, and the other foot's depth distributed between them. The sleepers on the excavated part of the road are hard freestone, and of oak or larch on the embanked and mossy parts. The stone blocks are about two feet over, and a foot and a half

thick, with two holes drilled in each, for receiving the iron chairs, which holes are filled up with hard oak pins, and have then two large spikes driven into them to hold the chairs firm. The chair and sleeper are found to be rendered by this mode almost as solid as if of a piece.

The rate of interest paid by this company on its money borrowed, is from $\frac{3}{4}$ to $3\frac{1}{2}$ per cent. The gross income in 1835 was,

From passengers, average 5s. each ..	£120,334
" 57,000 sheep, at 4d. each ..	950
" 108,000 pigs, 10d.	4,850
" Goods,	84,206
" Coal,	17,088

£227,428

From which deduct gross outlay, including interest on money, and all other expenses	£143,809
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Net surplus, £83,619

Allowing a dividend of rather more than 10 per cent. on the shares.

From the close of 1835 to 30th June, 1839, the revenue and profits have been,—

	Revenue.	Profits.
Half-year ending 30th June, 1836 ..	£109,355	£39,402
" 31st Dec. ..	125,280 ..	45,651
" 30th June, 1837 ..	105,951 ..	35,762
" 31st Dec. ..	120,048 ..	47,148
" 30th June, 1838 ..	123,610 ..	46,556
" 31st Dec. ..	136,693 ..	55,714
" 30th June, 1839 ..	123,814 ..	48,211

Showing a gradually advancing degree of prosperity.*

From the opening of this railway in 1830, down to 30th June, 1836, the number of passengers conveyed on it was 2,393,767; and each subsequent year has shown an average increase of nearly 30 per cent. On all the other railways the increase of passenger traffic has been equally great, and, contrasted with its limited extent under the old system of common turnpike travelling, forms one of the most extraordinary novelties of modern times. The transport of goods, cattle, and produce of all kinds, has also greatly increased; but in this latter respect there is not so much of new creation as in the former, the superior speed and facilities of railways having merely withdrawn the stream of transit from former devious channels.

The next, in point of importance, to the Liverpool and Manchester railway, completed subsequent to it, is the Grand Junction, or Birmingham and Liverpool, enumerated under date of 1833, and opened throughout its whole length in July, 1837. This line is $97\frac{1}{2}$ miles long between the two towns mentioned; but only $82\frac{1}{4}$ from Birmingham to where it runs into, and is now incorporated with, the Liverpool and Manchester line at Newton, a few miles from Liverpool. It traverses one of the most populous and important industrial districts of England, passing through, or near to, in its course the towns of Walsall, Bilston, Wolverhampton, Penkridge, and Stafford, the districts of the Potteries, Nantwich, Middlewich, Northwich, and Warington. The ground throughout was sufficiently favorable to obviate the expense of tunnelling, and presented fewer engineering difficulties of any kind, compared with other great lines in this country, than any that has yet been executed. On this account, notwithstanding its being nearly treble the length of the Liverpool and Manchester line, it has cost but £165,000 more than the latter, the whole expense of its completion having been £1,364,358. The steepest part of the line is 1 in 180, and that for a distance of only three miles; the other inclinations are much more favorable. The most striking works of art throughout its extent are, the viaduct over the river Weaver, about 64 miles from Birmingham; the Dutton viaduct, four miles farther on; and the bridge over the river Mersey and the Irwell canal, about a mile and a half from War-

rington. The first of these is a beautiful massive structure of stone, of five arches, each 63 feet span and 60 feet high, with parapets of 12 feet, making together an elevation of 72 feet from the water level underneath, the entire length of the viaduct being 456 feet. The Dutton viaduct is also of stone, with 20 arches, each 60 feet span; and the bridge across the river Mersey and the Irwell canal, of stone likewise, has 12 arches, the central two of 75 feet span each, and the others considerably less.

The gross income, and profits thereout, after covering all expenses—interest on loans included—will be seen from the following account furnished of the working of this line, from its opening on 4th July, 1837, to 30th June, 1839:—

Receipts.	Profits.
To 31st Dec., 1837 ..	£116,740
" 30th June, 1838 ..	125,130
" 31st Dec., 1838 ..	178,039 .. £73,714
" 30th June, 1839 ..	191,936 .. 98,109

The great increase shown in the last year, was held to arise chiefly from the entire opening of the London and Birmingham line, which, with the Grand Junction, completed the communication from the metropolis to Liverpool; but part of it also resulted from conveyance of merchandise, which could not be effected for a considerable while after the arrangements made for transit of passengers. The Grand Junction is now a highly prosperous undertaking, and its shares at an immense premium in the market. It has been used by government, since its completion, for the conveyance of the mails, as was the Liverpool and Manchester line before, and as the London and Birmingham has also been subsequently; and the rapid transmission of all kinds of correspondence thus effected between the metropolis and the north, including the bulk of the three kingdoms, has been productive of incalculable benefit to every description of public interest.*

* Since the foregoing was written, a report of the progress of this railway also, down to 31st Dec., 1839, has been published, from which the following results are selected:—

Gross income for half-year ending Dec. 31st ..	226,648	15	10
" Outlay, including interest on loans, &c. ..	118,139	7	2

Balance of profit .. £108,509 8 8
A dividend at the rate of 14 per cent. per annum was then declared; £5,836 ls. 4d. carried towards account of ensuing half year; and a sinking fund of £10,000 established to meet contingencies.

(To be Continued.)

VARIETIES.

PROGNOSTICATION OF FAMINE.—A gentleman named Whitlaw, waited upon the Lord Mayor on Tuesday for the purpose of advising the adoption of measures to prevent a famine, which, in his opinion, menaces this country next year. Mr. Whitlaw is represented to be "a gentleman of scientific acquirements," and he certainly appears to have crotchetts enough in his head to entitle him to be so denominated. His speculations, however, are rather incomprehensible to ordinary men, and apparently incongruous. His notions seem to be, that England ought to devote her principal attention to agriculture, and that by improved modes of cultivation, corn could be raised here as cheaply as in any other country. He has discovered that the destructive wars this country was engaged in, were carried on by means of the flourishing state of agriculture; and, that had the agriculturists, at the close of the war, raised double the quantity of produce, instead of throwing land out of culture, as they did, the government would have been enabled to pay off £20,000,000 annually of the national debt. Mr. W. seems to forget that it was the fall in the price of corn, at the peace which made the poorer lands not worth cultivating, and that the sudden repeal of the corn-laws, which he advocates, would be the means of throwing out of cultivation a still larger tract of country. Mr. Whitlaw's views are not confined to these subjects however. They embrace methods of preserving grain and butchers' meat, and general

* A report of its progress down to 31st Dec., 1839, has since been published, which fully bears out the above statement, as to its favorable progress. At the meeting at which this report was agreed to, a dividend at the rate of 10 per cent. per annum was declared.

directions for manuring, ploughing, &c. &c. The most novel idea which he entertains is, that the too abundant rains which we have lately had, are to be attributed partly to the increased evaporation caused by the quantity of land in permanent pasture, the ground being so trodden down by bullocks' feet as to prevent the rain from sinking into the earth!—Some other philosophers might, perhaps, be of opinion that this effect was counteracted by the diminished evaporation of the sea, caused by the additional number of ships afloat. If a famine do visit us, our readers may perhaps think that it will not be owing to either of these causes.

City Improvements.—A meeting, at which Sir Peter Laurie presided, was held at the Crown and Anchor a few days since, for the purpose of forwarding a project which has been in contemplation for the last two years, for forming a new street from Newgate-street to the eastern end of Holborn, by which Holborn and Snow hills will be avoided. From the statements put forth, it appears that the projected new street is to be perfectly level. It is to commence at the Old Bailey, exactly opposite to Newgate-street, leaving Skinner-street on the right, passing through Green Arbour-court, near Seacoal-lane, near Breakneck-steps, through Castle-street and Turnagain-lane to Farringdon-street, which it will cross by a viaduct bridge, and, in nearly a direct line, will intersect Plumtree-court and Shoe-lane, and, passing over St. Andrew's church-yard and through Thavies-inn, will terminate at Bartlett's-buildings, opposite Hatton-garden, on Holborn-hill. It is proposed to repay the expences of this undertaking chiefly by a toll of a penny upon each horse. 8,000,000 horses are said to pass and repass Holborn-hill annually. No toll is to be levied on foot passengers, of whom 27,000,000 are supposed to pass to and fro in the course of a year. Without venturing to offer an opinion upon the project in question, it certainly does appear somewhat remarkable that a practical remedy for the serious obstacles to traffic which are presented in Snow and Holborn hills has not, long ere this, been carried into effect. Sir Peter Laurie expressed himself to this effect at the meeting alluded to, and observed that, being desirous of ascertaining the result of the late improvements made in Moorgate, he had applied at the chamberlain's office, and found that the city, on applying to parliament for an act to authorise those improvements, stated that they had £100,000 to lay out for that purpose, but that the property interfered with had turned out so advantageously, that it had paid all expenses, and the £100,000 remained untouched, and was now applicable to other intended improvements in the city. Sir Peter said he approved of the plan for carrying out the projected new street, and would give the object every support in his power. He would be ready, on all occasions, to render his services in forwarding what he considered an undertaking of great public utility. A statement (if it could be obtained) of the almost numberless accidents, many of an awful nature, that have occurred on Snow and Holborn hills in the last twenty years, would go a great way in making the citizens sensible of the humanity, at least, of devising some plan for lessening the dangers of the traffic in that particular spot.

Prodigious Quantity of Water.—The quantity of water annually drawn from the coal works at Charleroy by the engine employed for that purpose, is 67,055,075 hectolitres.* It would suffice to fill a canal 10 metres † wide, by 5 deep, and 24 leagues in length; or a basin 915 metres square, and 8 deep, capable of holding all the navies of Europe. Supposing the earth to contain a thousand millions of inhabitants, and that each of them consumed two quarts and a half a day, this quantity of water would be sufficient for three days, for the whole population of the globe. The average height to which it is raised is 229 metres, being 250 feet higher than the highest of the Egyptian pyramids!

* A hectolitre is 22 imperial gallons.

† A metre three feet three and one-third inches English.

Belgium.—Monopoly of the Gas Company at Brussels.—Whatever may be said in favor of the new company for lighting Brussels with gas, it cannot be disputed that there is great inconvenience in the city granting a monopoly to any company whatever. It constitutes a forced tax upon the inhabitants, who are compelled to put up with any description of gas, with which they may be supplied, and to pay a high price for it, in order to compensate the contractors for the loss which they sustain in lighting the public lamps (*reverbères*). Moreover, in the event of a new gas being discovered, which should be free from smell, and much cheaper, the inhabitants will not be able to avail themselves of it, because, according to the terms of the contract with the present company, the city cannot allow the inventor to lay down fresh gas-pipes. It is therefore a monopoly which the municipal authorities have improperly assumed the power of granting, because it is contrary to the liberal spirit of the Belgian constitution, which ought to be infused into the acts of every administrative body in the kingdom.

Education in South Australia.—It gives us pleasure to see, in the last number of *The East Indian Telegraph*, a notice of the attention devoted by the emigrants in South Australia to the cause of education. We fully coincide with our contemporary in thinking that, "in all new settlements it is the bounden duty of the promoters of emigration to make such provision for the religious education of the poorer class of children, as shall tend to instil into their minds principles to make them happy in themselves, and a blessing to the land of their adoption. It will ever be a perfect waste of exertion and money to strive to civilise the natives, if we permit those, to whose example they will naturally look, to be brought up in ignorance of the only knowledge which can make them useful and happy members of society."

The Sanatorium.—We have already expressed our approbation of the highly-desirable institution projected under this title, and have, therefore, only to express our hope and belief that the public meeting which is to take place next Wednesday, will be final as to the arrangements for its immediate establishment. There is not a man in the country who has a son, a brother, a daughter, or sister, getting a respectable livelihood away from home, but is, or ought to be, deeply interested in it; and we confidently trust that the opprobrium of our having no such cheap and comfortable independent resource for the sick as France and Germany have, will at length be wiped away from the annals of British statistics.—*Examiner*.

The Use of Silk Under-clothing.—To every one in damp, moist conditions of the atmosphere, flannel is a great comfort, but silk is the most useful covering of the body. It is by far the best friend and comforter that can be applied. We know that if a silk handkerchief be perfectly dry, that lightning, the most accumulated, could not pass through it, so decided a non-conductor is it; hence, if worn next to the skin, the air cannot absorb the electricity of the human body. Silk waistcoats, drawers, and stockings of the same material, are of the greatest service during the humid state of the winter months of this country. The hypochondriac, the nervous, will derive from them more benefit than from the most active tonic, and they will prove a more invigorating cordial than any spirituous dram; nor are the effects transient, for a buoyancy of spirits, and an agreeable warmth, are thus diffused over the whole frame.—*Dr. Sigmund on Mercury*.

Sir Jeffrey Wyattville, the architect, died on Tuesday, at his house in Lower Brook-street. Sir Jeffrey was in his 74th year. By his death, there is another vacancy in the number of Royal Academicians.—*Evening Paper*.

The Passions.—The passions are never to be suppressed; they are to be directed. When directed, they are rather to be strengthened than subdued.

REMARKS ON THE LATE GALES.

BY J. R. HIND, Esq.

Read before the Uranian Society, February 4, 1840.

We have seldom experienced gales of such violence and long continuance as those that have recently visited our shores. From the 18th to the 27th, we have had a succession of heavy winds, without any decided intermission.

Now, it will be remarked that the Moon was on our meridian at the full on the 18th instant. This coincidence has of late years been attended with storms of wind, &c., I mean in the winter season.

Moon's Declination '27 degrees north, December 23, 1836. A gale on the 25th, and tremendous snow-storm (24th, &c.), from Edinburgh to Bilbao. The gale is described in *Met. Trans.* v. i.

Moon's declension 25 degrees north, December 31, 1838. Heavy and continuous gales of wind, which ended in the great storm of January 7, 1839.

Moon near the Tropic of Cancer, January 18, 1840. Continuous gales; moderated on the 27th.

It would be worth while determining whether any remarkable phenomenon (as a gale, &c.) occurred between our parallel and the equator, and a little west of the meridian of Greenwich, on January 20, 1829, and January 24, 1826, as the Moon then culminated at the full. Possibly it may be found that gales are only produced under such action when the Moon is northward of the tropic, or without the Sun's path. If so, we shall have a satisfactory reason for the apparent incongruity between this supposition and the actual state of the weather on the above dates.

I only offer the above instances to show the singular coincidence (if it be nothing more) between several violent atmospheric phenomena and the Moon's meridian transit; and I cannot but imagine that there is an intimate connexion between the Moon's meridian passage and the state of the weather, &c., on that day. The Moon's declination either north or south of the equator, must have some effect on the electric equilibrium of our atmosphere.

That tropical storms and those storms produced in the tropics are materially influenced by the Moon, is, I think, more than speculative. We observe that the West Indian hurricanes are regularly incited about the conjunction, opposition, or squares of the Moon. African tornadoes generally originated after the opposition, &c.; and as we become better acquainted with the storms of the torrid zone, it appears probable that they will be found dependent on solar and lunar action, and solely independent of any planetary agency whatever. Tropical phenomena are characterised by that unvarying regularity which is irreconcileable to the "astral theory;" and if the celestial bodies possess any influence on this our globe, it appears to be only the power of "affecting."

The magnetic action in great gales, like those we have recently experienced, ought not to be overlooked. The most violent storms that visit our shores have all a polar tendency (if I may be allowed the expression); those produced north of the magnetic equator having a tendency to flow towards the North Magnetic Pole, and those incited south of the equator having an opposite motion. Hence it would appear, that the magnetism is of a different kind, and possesses contrary properties, in the two hemispheres; and this is perfectly accordant with the primary principles of magnetism. Colonel Reid has shown that hurricanes in the southern hemisphere, possess an opposite rotatory motion to those north of the equator; and this is explanatory and illustrative of the peculiar properties with which terrestrial magnetism is imbued.

No one instance has been found of a storm experienced north of the equator, having been met with to the south.

I think we are justified in the supposition, that derangements caused in the electric equilibrium of our atmosphere, through the action of the Sun and

Moon, aided by the Earth's rapid rotation on its axis, are the cause of all hurricanes and storms experienced on our globe. At any rate, this is a theory which amply merits investigation.

MR. LEIGH HUNT'S NEW PLAY.

On reading over Mr. Leigh Hunt's new play, *A Legend of Florence*, we find in it many beauties and many blemishes. The former we would perpetuate the memory of; the latter we would forget. The subjoined extracts show the contrast between a good wife and a tyrannical husband—*Agolanti*, the husband of *Ginevra*, is reproaching her for her endurance:

I will not have these prying idlers
Put my domestic troubles to the blush;
Nor you sit thus, in ostentatious meekness,
Playing the victim with a pretty breath,
And smiles that say "God help me."—Well, madam,
What do you say?

Ginevra. I say I will do whatever

You think best, and desire.

Agolanti. And make the worst of it
By whatsoever may mislead, and vex!
There—now you make a pretty sign, as though
Your silence were compell'd.

Ginevra. What can I say,
Or what, alas! not say, and not be chid?
You shall not use me thus. I have not strength for it,
So great as you may think. My late sharp illness
Has left me weak.

Agolanti. I know you weaker, madam,
But never feeble enough to want the strength
Of contest and perverseness. Oh, men too,
Men may be weak, even from the magnanimity
Of strength itself; and women can take poor
Advantages, that were in men but cowardice.

Ginevra. (Aside.) Dear Heaven! what humblest doubts
of our self-knowledge
Should we not feel, when tyranny can talk thus.

Agolanti. Can you pretend, madam, with your surpassing
Candor and heavenly kindness, that you never
Utter'd one gentle sounding word, not meant
To give the hearer pain? me pain? your husband?
Whom in all evil thoughts you so pretend
To be unlike.

Ginevra. I cannot dare pretend it.

I am a woman, not an angel.

Agolanti. Ay,
See there—you have! you own it! how pretend then
To make such griefs of every petty syllable,
Wrung from myself by everlasting scorn?

Ginevra. One pain is not a thousand; nor one wrong,
Acknowledged and repented, of the habit
Of unprovoked and unrepented years.

Agolanti. Of unprovoked! Oh, let all provocation
Take every brutish shape it can devise
To try endurance with; taunt it in failure,
Grind it in want, stoop it with family shames,
Make gross the name of mother; call it fool,
Pander, slave, coward, whatsoever opprobrium
Makes the soul swoon within its rage, for want
Of some great answer, terrible as its wrong,
And it shall be as nothing to this miserable,
Meek-voiced, most malignant lie of lies,
This angel-mimicking non-provocation
From one too cold to enraged, and weak to tread on!
You never loved me once—You loved me not—
Never did—not when before the altar,
With a mean coldness, a worldly-minded coldness,
And lie on your lips, you took me for your husband,
Thinking to have a house, a purse, a liberty!
By, but not for, the man you scorn'd to love!

Ginevra. I scorn'd you not—and knew not what scorn
was—
Being scarcely past a child, and knowing nothing
But trusting thoughts and innocent daily habits.
Oh, could you trust yourself!—But why repeat
What still is thus repeated day by day?

Still ending with the question, "Why repeat?"
[Rising and moving about.]

You make the blood at last mount to my brain,
And tax me past endurance. What have I done,
Good God! what have I done, that I am thus
At the mercy of a mystery of tyranny,
Which from its victim demands every virtue,
And brings it none!

Agolanti. I thank you, madam, humbly,
That was sincere, at least.

Ginevra. I beg your pardon.

Anger is ever excessive, and speaks wrong.

Agolanti. This is the gentle, patient, unprovoked,
And unprovoking, never-answering she!

Ginevra. Nay, nay, say on; I do deserve it,—I

Who speak such evil of anger, and then am angry.

Yet you might pity me too, being like yourself

In fellowship there at least.

Agolanti. A taunt in friendliness!

Meekness's happiest condescension!

Ginevra. No,

So help me Heaven!—I but spoke in consciousness

Of what was weak on both sides. There's a love

In that, would you but know it, and encourage it.

The consciousness of wrong, in wills not evil,

Brings charity. Be you but charitable,
And I am grateful, and we both shall learn.

Agolanti. I am conscious of no wrong in this dispute,
Nor when we dispute, ever—except the wrong
Done to myself by a will far more wilful,
Because less moved, and less ingenuous.

Let them get charity, that show it.

Ginevra (who has rescued herself.) I pray you
Let Floridilla come to me. My lips

Will show you that I faint.

[AGOLANTI rings a bell on the table; and

FLORIDLILLA enters to her mistress.

Agolanti. When you have seen your mistress well again,
Go to Matteo; and tell him from herself,
That 'tis her orders she be excused at present
To all that come, her state requiring it.

And convalescence. Mark you that addition.

She's getting well; but to get well, needs rest.

[Exit.]

bringing with her some glorious compositions by MENDELSSOHN, which have yet to be interpreted in this country by her admired performance. PARRY's buffo trio was vociferously encored, but, instead of repeating it, he gave the "Music Lesson" with even added *éclat*. Often as we have been delighted with these amusing displays of Mr. PARRY's natural gifts, and professional talent, we never heard them more spiritedly or effectively given. Mrs. Aveling SMITH sang "I o L'udia" beautifully, with much taste and careful science, and narrowly escaped an *encore*. BRIZZI and Miss BIRCH gave a splendid duet from *I Puritani* with loud applause. The only drawback to the concert, admirably conducted by Mr. LAVENU, was its extreme length. There were 40 pieces of music, and we left the last part at midnight, unconcluded.

ADELPHI.—*Poor Jack, and Jack Sheppard* continue so extraordinarily attractive, that it is doubtful whether any other novelties will be required before the close of the season. A tide of success has flowed into this little theatre, which seems most reluctant to ebb. YATES says it will be "*spring-tides*" with him for some time to come.

OLYMPIC.—Mr. BUTLER is going the right way to work, and evinces an activity and liberality that must ensure him complete success. He has added two successful novelties this week to those of last week,—the one a burletta, from the pen of Leman REDE, called the *Two Greens*, the other by Joseph LUNN, called *French Potish*. Morris BARNETT is the hero of the latter, and plays a French adventurer with considerable humor. There are an abundance of novelties forthcoming; among them, *A Ladies Club*, by R. B. PEAKE, promises much amusement. The title is felicitous, and the subject big with material.

ENGLISH OPERA.—*Concerts à la Musard*.—"The cry," here, "is still they come!" and so the public will come, while they are so handsomely provided for. The bill of fare this week has been very savory, consisting of the most popular overtures, waltzes, quadrilles, &c., and some brilliant solos on the violin and cornet à pistons. Signor NEGRI's selection from the opera of *Robert Le Diable* is honored with an *encore* every evening of its performance, and it richly deserves it.

NEW STRAND.—Mr. ANDERSON, the "Great Magician of the North," has pitched his tent here, with a view to show the inhabitants of our Modern Babylon that "there are more things in Heaven and Earth than are dreamt of in their philosophy." To describe the wonderful magical deceptions of the "Wizard," is not in our power, but we most cordially recommend our readers to pay him a visit. He performed tricks upon our watch the other evening, and with the pocket-handkerchief of a lady in our locality, that were almost beyond belief, and which caused many persons to return home under the certain conviction that he was first-cousin to the _____, we need not mention the gentleman's name, lest he should peep over our elbow, and so spoil our weekly report.

A perfect rage for theatricals is now spreading over Hungary, and deepening all its channels as it goes. The following instance of enthusiasm, and of the energy which it begets, is both significant and amusing. The *dilettanti* of Prague, passionate admirers of Meyerbeer's music, recently addressed a petition to the directors of the German theatre in that city, expressing their anxious desire to see the "Huguenots" brought out; and received for answer, that the only obstacle which prevented compliance with their wish was, that the state of the finances for the year did not permit the extraordinary expense which must be incurred in the production of the piece in question, and would not amount to less than 12,000 florins (about 1,200/). Immediately on receipt of this answer, the subscribers to the petition held a meeting, and, the next day, transmitted to the theatrical directors 12,000 florins in gold.—We may mention, too, that after some delays, and in compliance with the earnest wish of the Viennese public, this same opera which had

hitherto been represented only on the small and insufficient theatre of the Josephstadt in that city, has been brought out with brilliant success at the Imperial theatre,—with an entire alteration of the libretto, however, and under the new name of 'The Ghibeling at Pisa,' prescribed by the censorship.

VAN AMBURGH.—We regret to hear from a Paris letter, that this fool-hardy man, after recovering from a long and severe illness from a wound in his leg caused by a tiger, has been again bitten in the arm by a lion, and will be unable to perform at Rouen, where he was to have exhibited his beasts. Van Amburgh's courage in hitting the lion on the nose, to make it loose its hold, is much spoken of.

PARIS.—*L'Ecole des Femmes*, the celebrated play of Molière, has been re-produced at the Théâtre Français for the *début* of M. Varlet; who, with a boldness which is highly to be praised, has at length quitted the long line of youthful intrigues, *belles amours*, &c., which form the usual stock of French vaudevilles, and hazarded his talent *en plein Théâtre Français*. M. Varlet, however, was standing on unequal ground; for, never were good verses (the verses of Molière!) so wretchedly curtailed of their fair proportions as on the night in question. The part of Agnes, we may add, was not confided to Mdlle. Doze. M. Varlet is an acquisition to any stage. Mdlle. Mars has just taken her benefit here; the King, Queen, and the other members of the Royal Family honored the representation with their presence.—The lady is 61, (*in a whisper*.) At the *Renaissance*, two new vaudevilles have been brought out, *Le Mari de la Fauvette* and *Les Pages de Louis XII.*, of both of which the less said the better; the canvas of the dramatic picture of each was well filled, but the drawing was a failure. Let us turn to the *Theatre de Rouen*, where we find *Les Catalans*, an opera in two acts; the words by M. Burest de Gnésy—the music by M. Elwart. M. Elwart has gained some prizes at Rome—has the reputation of great industry—and has just arrived from Italy full of new melody from the "sunny South." The opera was perfectly successful; a chorus in the first act, and a splendid cavatina in the second, drew down repeated plaudits. There can be little doubt that the composition will have a great run. If any city in France ought to have a good theatre,—it is Rouen. The names of Corneille and Boieldieu ought to inspire a good opera. The *Duc de Lauzun* is the title of a vaudeville in two acts, at the *Theatre du Vaudeville*. The memoir of this gallant of the Court of Louis XIV., presents us rather with the portrait of an impudent *roué*, though accomplished courtier, with all the "bijouterie,"

D'un oisif mais bel esprit;"

but the authors have here represented him in his boy's costume, *un enfant tout frais sorti de sa province amoureuse comme un feu de la grande Mademoiselle*,—no other than Mdlle. de Montpensier! poor Mdlle. de Montpensier! whose youth was wasted in waiting for husbands who never came, whose dreams presented alternately the fleeting images of Louis XIV., Louis de Bourbon of Soissons, Philip IV. of Spain, the Prince of Wales, the Archduke Leopold, the Duke of Savoy—and how many others? yet it was not until she melted into the respectable age of 42, that she confessed herself affected *au cœur*. Mdlle. Fargueil, who supported this character in an animated and rapid style, certainly did not approach our conception of the character; she was far—very far indeed from the *dame si tendre et si mure* of the Memoirs. Forget, however, the historical recollection of the grand-daughter of Henry IV.; and Mdlle. Fargueil cannot fail to please by a charming exuberance of youth and talent. At the *Theatre du Palais Royal*, a new class of vaudeville attracts our attention; the last of its kind is *La Famille du Fumiste*, which requires no further notice than as being part and parcel of a series of class dramas, if we may use an artist's expression, with which the capital will, doubtless, shortly be inundated. Before long, we shall see *La Famille du Drogiste*, *Le Fils du Rempailleur de Chaises*, *La mère du Maréchal ferrant* &c.; need we say more—*The Gazette Musicale*. The eighth con-

cert to the subscribers of this journal was given on Friday last, on which occasion, the symphony of Harold opened the evening; Mdlle. Unal sang two songs very sweetly, and Battu, the celebrated violoncellist, executed a beautiful elegy, together with La Romanesca, which was loudly called for. M. Artot, too, who of a surety keeps some *familiar* in his violin, favored us with some exquisite conceptions of passion. *Italy*,—the new opera of *Giovanni da Brogida*, words and music, by Prince Joseph Poniatowsky, is at present the subject of conversation at Florence. It has been twice represented. The Prince, his brother Charles, and the Princess Eliza, his wife, took the leading parts. The musical talent of this family is familiar to Paris and Vienna. Letters and papers from *Rome*, unite in praise of the voice of Mdlle. Mequillet, which is spoken of as being at the same time sweet, powerful, and sonorous. The lady is a pupil of Banderali, who, at present, is engaged with Madame Ungher and Donzelli, at the opera there. The French consider this a triumph of native talent. Mdlle. Mequillet made her *début* at San Carlos, at Naples, and astonished the *dilettante* of Rome, in the part of *Seymon*, in *Anna Bolena*, and *Palmyra* in Rossini's, *L'Assedio di Corinto*.

Novel Mode of conveying a Steam Engine.—It is but a short period that the steam engine has been used to convey post letters on land; and now, for the first time, a post letter is made the means of carrying a steam engine. A Patent Agent, residing in London, received on the 29th of January, *per post*, from Messrs. Chadburn, Brothers, Sheffield, a perfect working steam engine, constructed on the oscillating cylinder principle, with its fly-wheel, framing, boiler, and fire-place complete. The whole was inclosed in a case wrapped in paper, secured with string, and accompanied with a description of its construction and mode of working. The total weight being under four ounces, was charged as eight letters, which sum being pre-paid at Sheffield, cost eightpence postage, and came safe to hand with its fellow penny travellers. We understand that Messrs. Bailey, of Holborn, received last week, *per post*, a proof impression of an embossed metal plate, which, being under half an ounce, was directed on its surface, pre-paid at Birmingham, and delivered as a penny post letter. Query: How did the postmaster put the post-office stamps upon it?

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INVENTIONS, TRADE, MANUFACTURES, LITERATURE, AND THE ARTS.

SELECTED REMARKS (FROM MORE THAN 200 NOTICES) OF THE PRESS.

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fruits of his labor enjoyed by another, while he himself has been reduced to poverty. It is to protect the poor inventor that the 'Advocate' has been established, and if but true to its professions, there are no bounds to the good it may effect. It is in very talented hands, and we have no doubt of its success."

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LITERATURE AND FINE ARTS DEPARTMENT.

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DRAMATIC DEPARTMENT.

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* * * See also the Remarks of the Public Press generally.

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INVENTORS'

AND JOURNAL

A WEEKLY BRITISH AND

ADVOCATE,

OF INDUSTRY;

FOREIGN MISCELLANY OF



INVENTIONS, TRADE, MANUFACTURES, LITERATURE, AND THE ARTS.

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SATURDAY, FEBRUARY 29, 1840.

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ON THE PATENT LAWS OF ENGLAND.

LICENSES UNDER PATENTS.

(Continued from our last.)

Some explanatory observations, relative to the law and practice of granting licenses under letters patent for new inventions, were introduced in our last number; we now feel justified in resuming the subject, in order to render this very important branch of our patent laws more intelligible to our readers.

If a patentee refuse to grant licenses, and his patent right be of *public* importance, he almost inevitably induces infringements, and those infringements may be committed to such an extent, that it will be scarcely possible for a single individual to repress them, even though he may recover in several actions successively. Patentees will generally find that the safer, and more lucrative plan, is to grant licenses for other persons to exercise the invention, having regard, of course, to the particular circumstances of the trade, the situation of the parties, the number of licenses which are actually in exercise at the time, the competition and demand in the market, and the effect of other inventions or means, which may then exist, or may afterwards spring up to divide the supply. Though it is desirable for the public good that the practice of new inventions should be extended, the patentee should *honestly* exercise the power of limiting the use of the invention, so as to protect those who have already embarked therein, from undue competition; his own interest indeed, if he understand it correctly, will lead him right in that respect, for it is rarely that the true interest of a patentee, if he has a valid patent right, is adverse to that of the public. If he has a patent right which is insecure at law, he may *perhaps* resort to trick and fraud, combination or monopoly, to prop it up; but a patent privilege, which stands on its own intrinsic merits, can never do the public any positive injury. It has been argued, that a person by taking a license from a patentee, admits the validity of the grant, and would be estopped from contesting that fact in an action in which that point might be raised: that supposition, however, appears to be incorrect, for if A pretend to derive a right under a patent, and come to an agreement with B, by which he covenants that B shall be at liberty to use the invention, provided he use it in the manner therein specified, in consideration whereof B covenants not to use any other machine; if A has not such right, B has not the consideration for which he entered into his covenant, and is not bound by it: and if A

bring an action against B on the covenant, B is not precluded from pleading in answer thereto, that the invention was not new, or that the patentee was not the inventor. Thus, in the case of Hayne and another v. Maltby, which was an action of covenant on articles of agreement, the declaration alleged that the articles recited that the plaintiffs were the assignees of T. Taylor, of a patent for an engine or machine to be fixed to a common stocking-frame for making net or open work, called point net, and that the defendant had applied to the plaintiffs for their permission to use a stocking-frame to one of their patent machines, to which they had consented, on condition of his working it in the manner described in the specification; and then stated a covenant by the plaintiffs with the defendant, that he should, during the remainder of the term of the letters patent, freely use and enjoy one stocking-frame with their patent engine or machine thereto, in case the same should be worked only in the manner described in the specification, without any interruption by them; and also a covenant by the defendant, that he would not, during the residue of the term of the letters patent, use or employ any of the patent engines, or any engines resembling the same, except the stocking-frame and machine in the articles of agreement allowed to be employed by him; the declaration then averred enjoyment by the defendant, without any interruption by the plaintiffs; and assigned two breaches, viz. one for using and employing patent engines or machines other than and besides that by the agreement allowed to be employed by him; and the other, for using engines or machines resembling the patent machines. To this there were several pleas in defence; the three last of which only are material here.

The third plea set forth the letters patent, which stated a petition by the patentee that he was the inventor of the machine, and contained the usual proviso that the same should be void, if the patentee did not enroll a specification of his invention in Chancery in four months, and then averred that the specification was not so enrolled: the fourth plea was, that the invention mentioned in the patent was not a new invention; and the fifth, that it was not discovered by Taylor the patentee. The plaintiff demurred to the third, fourth, and fifth pleas, because the defendant attempted thereby to put in issue matters foreign to the merits of the cause, as he was estopped by his own deed from those facts which he therein admitted. But the court held, that the doctrine of estoppel did not apply, as the defendant was not bound by his covenant, because the consideration thereof was fraudulent and void; and judgment was accordingly given for the defendant on the demurrer, which established the validity of

those pleas, and allowed him to contest those facts on the trial.

Some patentees have contended, that by granting licenses they in reality purchase opposition to the patent right, because they believe that it is to the interest of those who pay such taxes, to discover some flaws in the patent, or specification, by which they can destroy the exclusive right of the patentee, and thereby relieve themselves from the payment of any further rent or compensation for the exercise of the patent "manufacture." Experience, however, clearly proves the fallacy of such an opinion, and, on the contrary, that it is to the advantage of the patentee and licensees, to confine the trade to themselves by maintaining the validity of the letters patent; for if the profits of the invention be of importance, those which result to them from a limited trade must be of more value than the amount of tax which they may pay for the use of the patent process.

There have been instances, in which the proprietors of doubtful or invalid patent rights have *collusively* obtained verdicts against *supposed* infringers, in order that it might appear to the public that the patents were good at law. In a case of the kind which occurred some years ago, the conditions of the compromise, which was entered into between the patentee and the infringer, against whom he had instituted proceedings, were, that the patentee should be *suffered to take a verdict* for the purpose of giving a colorable validity to the patent, and that the infringers should then take licenses at a premium, and make a common purse to prosecute and prevent others from using the invention, the patentee undertaking to grant no other license; and the patent was accordingly converted into a close monopoly. It is evident, that if the patentee could have enforced his patent, he would not have submitted to such terms, for the profit which he would have derived from granting licenses, in conjunction with his own trade in the patent manufacture, would have considerably exceeded the remuneration which resulted from the *collusive* monopoly.

(To be Continued.)

ON THE PUBLICATION OF SPECIFICATIONS.

We have been so overwhelmed of late by a press of matter, that we have been prevented giving so early an insertion as we wished to the answer recently received, to the letter signed "J. D." which appeared in the "Inventors' Advocate"

money to others, a man deprives himself of useful and agreeable enjoyments, which he could otherwise have immediately procured; in short, that he becomes dispossessed of it for a certain time, a privation which ought to have its value; at least so Ulpian thought, and expressed in these laconic words: *Minus solvit, qui tardius solvit.* By a gratuitous loan, a man deprives himself of the faculty of augmenting, either by the purchase of property in land, or by commercial or other operations, the revenues resulting from his industry, to favor the condition of the borrower. The debtor gains while the creditor is losing. But although no restraint should be put upon the free-will of a lender who acts upon the principles of benevolence, every interested act which is not founded upon a perfect equality of advantages, when, in short, the advantage is only on one side, is in its very essence unjust. "It is just, on the contrary," says Puffendorf, "to participate in the profits derived from our money by a person to whom we are under no obligation of lending it."

If to this it be objected that in reality the debtor finds means of turning his loan to account, but that it is his own industry which renders it fertile, and that consequently he alone ought to profit by it, we reply that here the money is the principal mobile of this profit. What would industry be without money, and money without industry? It is but just, therefore, that both derive a portion of the gain which both were instrumental in procuring. It is the same with a field, which produces nothing if not cultivated; or with utensils, which are useless if we are ignorant of the art of employing them, and for the use of which, notwithstanding, we are enabled to derive a benefit from hire. In short, if generous and disinterested assistance became weakened, from being overstrained, persons whose whole property consists only of capital, and merchants whose traffic receives its mainspring from money borrowed, would march with rapid strides towards their ruin.

In the middle ages, conscientious attempts were made to succour indigence; but the principle was never properly comprehended, if it be permitted to employ the expression of Say, + "that in investing usury with shame and danger, it increases to the prejudice of the poor; and that the principal motive of saving, namely, to create a revenue, is suppressed; the only means of subtracting the unfortunate from misery, idleness, and vice, is to facilitate the alliance of wealth with industry; infinitely more service is rendered to the poor in procuring them the means of providing for their own subsistence than in presenting them with alms."

However this may be, lending money on interest was considered contrary to Christian charity, and, as being contrary to the law of nature, was in many countries proscribed by royal ordinances.

St. Louis positively prohibited it by law in 1250; Philip the Fair did the same at Poissy in 1312. In 1579 a royal ordonance issued at Blois + rendered it criminal, and punished the delinquent, for the first offence by fine and banishment during a certain period, and for the second, by confiscation of body and goods, and hard labor for life at the galleyes. The canonical penalties were, for clerks, deposition from their ecclesiastical functions; for the laity, excommunication and nullity of testamentary bequests.

In Germany, two rescripts of the Emperor in 1548 and 1577, condemned the money lender on interest to infamy, and the loss of a fourth of his capital; he was deprived of the faculty of bequeathing, and denied the right of Christian burial. §

Section 3d.—The evils which every where resulted from these absurd and imprudent prohibitions were incalculable; they gave rise, not infrequently, to such serious disturbances that the authorities were obliged to allow the laws on usury to remain dormant. Commerce, which can never

prosper without the aid of loans, fell into decadence, and changed hands, becoming absorbed by an order of men totally unscrupulous as to the means of enriching themselves. "For whenever," says Montesquieu on this subject, "a prohibition is carried against anything natural to be permitted, or of necessary existence, it gives rise to want of principle in those who continue to practise it."* Gratuitous loans were far too few for the host of new wants ever springing from the progress of civilisation, industry, and luxury; money was indispensable; lending on interest, interdicted among Christians, was abandoned to the Jewish nation, who had long exercised it, and who, alone in possession of a traffic abhorred, condemned, and punished, sought to indemnify themselves for the humiliations, extortions, outrages, robberies, and even massacres, of which they were constantly the victims, by an exorbitant and monstrous interest. The immense wealth they had thus amassed, sometimes drew on them the jealousy of the nobles, others purchased their protection. The nobles not infrequently had recourse to their ability and services for the purpose of secretly repairing their dilapidated fortunes. They would lend them money in return, or they would lend to the people, under the shelter of their names, and would occasionally borrow of them immense sums, and then invoke the protection of the laws to liberate them from the necessity of reimbursement.

other beasts of burden to lie upon, for one night passed on the snow would render them unserviceable. While this is doing, other men are cutting rusher, which make excellent fuel. If they find none, they must make use of the wood supplied for cooking, or bivouac the night through without fire. Under all circumstances, however, the attention paid to the comforts of the troops is excellent. Soup is given out to the men morning and evening, and when it is extremely cold, a drink made of honey, seasoned with pepper and other spices; nor is brandy spared. We make no other halt than that which I have mentioned; but the soldiers in turn are allowed to mount the camels, and when on their backs produce a pictureque effect. Still the difficulties we have to overcome are unparalleled. Imagine us on this painful march, encumbered with a burthensome mass of clothing, over a trackless waste, covered with a thick coat of snow. Conceive our feelings when the reveille sounds at two in the morning, and our pain in having to load the camels while our limbs are stiff with cold. During some days past, the thermometer has been down as low as 34 degrees below zero of Reaumur, 45 below the zero point of Fahrenheit, and never has been higher than 12 below zero R., or 5 degrees above zero F. But it is from the snow drifts that we suffer most. They come with a violence unknown in Europe, and seem to be sent to sweep all intruders from the face of the land. When we reflect that our men have for upwards of two months had no prospect but an arid and virgin soil, their moral and physical courage cannot be sufficiently admired. Not only has the number of our sick been very small, but not one of our men has been frostbitten, and when our tents are pitched, our soldiers become full of life and gaiety, and sing the joyous airs of their native country. Whatever may be the issue of this expedition, its conquest over the unexampled obstacles of such a march of 900 miles will be cited as one of the most glorious military feats of ancient and modern times. Our correspondence with Oremburg is carried on by the Kirghis, who travel between 60 and 80 miles a day, going singly, or at most in couples, using alternately two or three horses. They traverse the desert in the most frightful weather, braving the wolves, and the still more savage brigands. As they can carry no fuel with them, they make a shelter for themselves at night by forming cavities in the snow. Their only food is a species of cheese made of sheep's milk, which is very hard, and in small quantities. The view of the steppes by which we are surrounded, is sombre and monotonous in the extreme. Here and there near the streams are to be seen some mountains totally bare, and on the plains a few scattered tufts of dwarfish alders or willows.

RUSSIAN EXPEDITION TO CHIVA.

A Russian officer, attached to the expedition against Chiva, writes to the *Breslaw Gazette*, from the Camp at Emba, on January 17th, a letter, from which we take the following extracts:—

"Small detachments have been posted on the steppes at two points, one 315 and the other 128 miles from the Russian frontier. Each of these is well fortified, and is a dépôt for provisions and forage. At about 225 miles from the last, which is called Ak Bulak, rises the plateau of the mountains which separate the Caspian Sea from Lake Aral, and border the western shore of the lake with a girdle of rocks 700 feet high, nearly perpendicular, and accessible only in a few places. Springs are to be found only at a distance from each other of 270 miles, affording to the traveller and his camels but a scanty supply of water, and that brackish. It is from the southern side only that one can descend into the Oasis of Chiva, which is fertile, and diversified with habitations and water courses. The little time we had before us, and the difficulty of procuring necessities in this frightful desert, admitted of the equipment of only a comparatively inconsiderable corps, and the more so, as on account of the want of water, the expedition could only be undertaken in the winter. The troops therefore have been compelled to provide themselves with numerous articles, besides fuel, which they might have dispensed with at a different season. They have required 10,000 camels for the purpose of enabling them to transport the provisions and ammunition. Our convoy, when on its march, occupies a space of 500 paces in length by 250 in breadth. The infantry and artillery march at the head, followed by the train. When they reach a defile, the infantry occupies the most commanding points, while the cavalry keeps order among the Kirghis, who lead the camels. It is a singular spectacle to see this mass from a distance, commencing its march at the first dawn of day. In general, six or eight camels are attached in string, each fastened by the nose. The treatment of these useful animals is one of our greatest cares. At two o'clock every afternoon, we make a halt for the purpose of allowing them and our horses to graze, and, notwithstanding the depth of the snow, they find abundance of pasture underneath it. After bringing in the camels, the Kirghis clear away the snow around their huts, and spread blankets for these and

SPECIFICATIONS.

A LIST OF SPECIFICATIONS
ENTERED AT THE ENROLLMENT OFFICE, UP TO THE
WEEK ENDING MARCH 21, 1840.

(Continued from our last.)

ENGLAND.

JOHN AUGUSTUS TULK, of Seaton and Lower Iron-works, Cumberland, iron-master, improvements in the manufacture of Iron, Feb. 26.—This improvement consists in a process for making iron, in blast furnaces, from the rich ores of iron, called haematite. The inventor states, that iron is at present obtained chiefly from the argillaceous ores, which are very poor in iron, and abound in siliceous matter. In the reduction of the argillaceous ores, lime is employed as a flux, which, combining with the siliceous matter, forms a species of glass or slag, whilst the iron, combining with a portion of carbon, forms a carburet of iron; and the slag floating above the iron, protects it from oxidation. The haematite ores having but a very small portion of siliceous matter, cannot form a slag, and are therefore at

* Puff, lib. v., chap. 7, sec. 11.

+ Catechisme d'Econom. Polit. note page 249, 3d edit.

‡ Pothier, Traité sur l'Usure, 2me partie, sec. 67.

§ Vernher, Manuale Pandect, lib. xxii., sec. 9.

* Esprit des Lois, liv. xxxii., chap. 22.

present only used in combination with a much larger portion of argillaceous ores. To supply this defect, the patentee adds to the ores a sufficient quantity of such vitreous materials as can be most easily procured—as the slag from iron works, where argillaceous ores are reduced, and which is at present merely refuse, sea sand, the refuse of glass works, &c. At his own works, he employs sand in the proportion of 92 silica to 101 of lime, and he recommends that these materials should be first fused and run into slag, in preference to adding them to the ores when in the furnace. The proportions he employs are one of haematite to two of slag.

FREDERICK BROWN, of Luton, Bedford, iron-monger, *improvements in stoves or fire-places*, March 9.—This is an improvement upon ranges or cooking stoves, and the object is to afford the means of roasting by a close fire. The fire-place is inclosed at the sides and back by the oven and boiler; and at top is covered by a hot plate, which is slid back, when it is required to throw on fuel. In lieu of fire bars, in front there is a plate of iron, which (it is stated) throws out a very steady and equable heat, and performs the operation of roasting better than an open fire. When not required for cooking, a second iron plate is fixed in front of the former, leaving a small space between them, by which a current of hot air is produced, which may be made to circulate through the room or directed up the chimney.

JOHN RAPSON, Emmett-street, Poplar, *improvements in steering ships and vessels*, March 9.—This improvement applies to the case of ships, which steer by means of ropes or chains, attached to the head of the tiller, and the steering wheel. In the ordinary arrangement, as the end of the tiller describes the arc of a circle, one of the ropes becomes slackened in moving the helm; and in addition to the time lost in taking up the slack at each shift of the helm, the helmsman is exposed to serious injury from the shocks of the tiller in a heavy sea. To obviate these inconveniences, the inventor, instead of attaching the ropes to the tiller itself, makes them fast to a framing, which either has a hole, through which the end of the tiller slides, or it turns upon pin, moving in slot in the tiller. The framing traverses in a rectilinear groove running across the vessel in a line with the leading blocks, through which the ropes lead to the steering wheel; so that the frame constantly moves in a right line, and the ropes are therefore always tight; whilst the tiller, sliding through the frame, moves in an arc of a circle.

PAUL ROBIN, St. Paul's-chain, London, *improvements in spinning*, March 9.—This improvement is to supersede the intermediate processes now employed in spinning, and to spin the slivers into a thread, as they leave the carding machine, giving at the same time the requisite twist. The cardings are taken off the carding machine by two doffing cylinders, which are partially covered by bands of cards with spaces between them; the bands on the upper cylinder lying immediately over the spaces on the lower cylinder: thus the cardings are divided into as many rolls or slivers as there are bands. The edge of these slivers are separated from each other by means of a series of dividing plates, the edges of which press against the doffing cylinders. From the doffers, each sliver is put through a hole in a small pulley, oblique to the axis, and, passing over a hook in the end of the pulley, is put through hooks in a traversing frame, and then attached to the bobbins. The pulleys revolve in collars at each end, and are set in motion by an endless band, and according as the speed of the pulleys exceeds that of the bobbins, will be the degree of twist. The traversing frame receives a to and fro motion from a small crank, and by this means the thread is laid equally on the bobbins.

When the thread is intended for weft, it requires no more twist than is given in the spinning machine, and the bobbin may be placed in the winding machine and wound off, by attaching the thread directly to the winder. If more twist be required, each bobbin is placed with its axes horizontally in a small frame, which revolves round a vertical axis,

and in the top of each of these frames is a small aperture, through which the thread passes, and is led on to a roller of larger diameter than the bobbin; and against these rollers runs a friction roller. The frames and rollers are attached to the winding machine, and the frames are set in motion by endless bands running over a roller; and by increasing the speed of the frames beyond that of the bobbins, the twist will be increased in proportion to the difference of the speeds.

SAMUEL STOCKER, High Holborn, pump-maker, *improvements in beer, cider, and spirit engines*, March 11.—We cannot pretend to describe minutely the improvements set forth in this specification, which contains sixteen claims, and is illustrated by six and twenty figures. Nine of these claims are for variations in the mode of connecting the lever with the piston rod; another claim is for placing the pump barrel horizontally upon a vertical pipe; another for making the barrel of glass, or earthenware; and the remainder, placing the valves in positions more generally accessible than at present.

MOSES POOLE, Lincoln's-inn, *improvements in apparatus applicable to steam-boilers, in order to render them more safe*, March 11.—The first improvement consists in a mode of applying to the boiler, as a species of safety valve, a metallic plate or disc, which shall burst when the steam in the boiler attains a certain degree of pressure, and thus relieve the boiler, which plate may afterwards be replaced with a fresh one, without stopping the working of the engines.

To an aperture in any convenient part of the boiler is fixed a curved tube, terminating in an enlargement or cup, having a ledge running round the bottom for the safety disc to rest upon. Upon the disc is laid a ring, the edge of which is chamfered off, so as not to cut the disc, and this ring is secured down firmly by another ring, which is screwed into the upper part of the cup. The outer bend of the pipe contains water, both above and below the disc, in order to maintain it at the same temperature on each side. On any convenient part of the bent pipe is fitted a cock, by closing which, the connection of the cup with the boiler is shut off, and a burst disc may then be replaced without stopping the operation of the engines.

The second improvement consists in the application of a steam whistle, to give notice when the surface of the water in the boiler is below a certain point. The whistle is of the ordinary kind, and the aperture by which it communicates with the boiler is closed by a stem, at the lower end of which is a float, composed of cork, or some light wood, and covered with copper. When the water gets too low, the float and stem descend with it, and the aperture being thus unstopped, the steam rushes out through the whistle, and gives notice of the deficiency.

DAVID GREENWOOD, Liverpool, millwright, and **WILLIAM PICKERING**, Liverpool, merchant, *improvements in engines for obtaining power*, March 14.—This improvement is in the construction of a rotary engine. By way of illustration, we will say, an outer cylinder of 3 feet diameter is secured to a frame, and at the upper or lower surface are two passages for admitting and emitting steam. A second cylinder, about $2\frac{1}{2}$ feet diameter, is placed within the outer cylinder, and close to the lower or upper circle of the cylinder, so as to leave a space of six inches between the inner cylinder and the passage where the steam enters. This inner cylinder is formed with an axle to work in proper bearings; and two levers, placed immediately in the centre of this cylinder, are made to press, by means of springs, on the inner surface of the outer cylinder; thus when the inner cylinder of $2\frac{1}{2}$ feet diameter rotates, the levers have a tendency outwards, and the steam entering, acts with all its force on the projecting lever.

A sliding valve is so constructed over the two passages, that the induction passage for steam can be, at a moment's notice, made the ejection passage; when the ejection passage becomes the induction, the action of the engine is immediately reversed.

THOMAS TODD, Kingston-upon-Hull, York, *improvements in propelling*, March 14.—To prevent any tail or backwater in the rotation of paddle-wheels, the inventor adopts the use of two or three-fold paddles, which having gudgeons projecting from their ends, are made to work in brass bearings on the rim and spokes of the wheel. The lower end of each paddle is weighted, so that in rotating with the wheel, the paddles always maintain a vertical position, thus avoiding the possibility of any backwater.

The inventor also adopts a zig-zag paddle, and a curved paddle weighted at bottom. The concave side forms the headstroke, and the convex side the backstroke.

JOHN WERTHEIMER, West-street, Finsbury-circus, printer, *improvements in producing ornamental raised surfaces in paper*, March 19.—The first process for making this ornamental paper is to place a carved block, of whatever figure required, on a table; a small square frame fits round the block, and the pulp is poured into this frame upon the carved work. A light horse-hair frame is pressed horizontally down upon the pulp, and the water therein, rising through the distended tissue, passes off at any convenient hole made for that purpose.

The water should be drained from the pulp, that forms an homogeneous mass on the face of the figure block. When dried by the heat of the gun, or by hot air, the ornamental paper may be removed from the block.

The other two processes are in some way similar. The workman dips the ordinary sieve into the pulp, as in paper-making, and as soon as the pulp begins to set, it is removed by the hand from the sieve, and is placed on the figured block. A number of these layers are placed one upon the other, when by means of pressure, an amalgamation of the component parts is formed on the surface of the block.

The inventor also claims the use of resinous or other gummy substances, for the purpose of preventing moisture or damp having any effect on the figured or ornamental paper.

ENTERED AT THE ROLLS CHAPEL OFFICE, UP TO THE WEEK ENDING MARCH 21, 1840.

(Continued from page 180.)

ENGLAND.

JAMES VARDY, Wolverhampton, and **MORITZ PLATOW**, Poland-street, Oxford-street, engineer, *improvements in making decoctions of coffee, and other matters*, Feb. 16.—This coffee or tea urn consists of two parts, the upper part is made of glass or of metal, and fastens on to the receiver below by means of an air-tight joint. A tube attached to the upper vessel, descends almost to the bottom of the under vessel, and above this tube is a perforated plate, which is held down by a spiral spring.

In order to make a decoction of coffee, a sufficient quantity of water is poured into the under vessel, and the ground coffee is placed on the perforated plate, situated in the glass vase. A spirit lamp is lighted and placed under the urn or lower vessel, which being air-tight, will soon have its contents formed into steam, which forces the water up the descending tube into the glass vase, and there, in a state of ebullition, boils the ground coffee, so long as the heat, that generates the steam, remains under the lower vessel. When the lamp, or other heat is removed, the steam and boiling coffee condense and filters through the perforated plate into the lower vessel, when it is fit for immediate use.

HENRY PINKUS, Old Slaughter's Coffee-house, St. Martin's-lane, *improvements in the methods of applying motive power to the repelling of machinery, which, improvements are applicable to several useful purposes*, Feb. 26.—A number of pipes, similar to the main pipes for water or gas, are placed under ground on an estate, or along the banks of a canal, or along a line of road or railway. A stationary engine is placed at some convenient position, for the purpose of forcing compressed air or gas, if used, along the tubes.

The locomotive machine, which may be a plough, a harrow, a scythe, a carriage, or a boat, receives its supply of air or gas from these main pipes, which have vertical tubes, with stoppers running at different situations, so as to facilitate the supply of power.

The locomotive plough, &c. has a cylindrical drum, carrying an elastic tube; one end of which is connected with the working cylinders of the engine, and the other end is attached to the nearest vertical tube, rising from the main pipe.

Thus the locomotive plough, &c., receives its supply of air or gas through the elastic tube, which uncoils from the drum, as the machine proceeds; and when the plough returns, it, by means of its drum, winds up the uncoiled elastic tube; thus continuing to perform the same operation until it is requisite to remove that end of the elastic pipe to the next vertical tube joint.

The inventor assumes that an estate of 16 miles might be laid down with main pipes, and that an engine placed in a central position would supply air or gas sufficient to work any number of ploughs, harrows, scythes, &c.

JOHN MUIR, jun., Glasgow, merchant, *certain improvements in the apparatus connected with the discharging press, for conducting, distributing, and applying the discharging liquors and dyeing liquors*, Feb. 26.—The principal object of this improvement is to impress at one operation the goods with two or more colors. In the ordinary method, the layers of cotton or silk, &c., are placed under the press with a figured perforated plate over them, and the brander above, that is pressed down upon the whole, distributes the color over the plate; when by means of an air pump, the color is forced down the perforated holes, and passes in a direct line through the layers of cotton or silk.

The first improvement consists in placing edge-wise on to the brander, a thin copper plate, in various figures, which, fitting on to the perforated plate, divides the different colors.

2nd improvement consists in forming separate canals or ducts, to supply the discharging liquor.

3rd improvement is the method of arranging a succession of branders, in order to increase space for the canals or ducts, to supply the various colors.

4th improvement is to produce a vacuum by means of steam under the perforated plate on the bed of the press, which causes the atmospheric air to press the color through the different layers.

5th improvement is for pressing the colors through the goods, by means of steam, and not by compressed air as heretofore.

6th improvement is for placing a succession of perforated plates among the piles of goods, so as to direct the color or colors more distinctly, and prevent them spreading or intermixing.

STEPHEN ROGERS, City of Bristol, merchant, *certain improvements in building the walls of houses and other edifices*, March 16.—This improvement in building walls, is simply to place the ordinary bricks edgewise: thus, in forming a nine-inch brick wall, there must be a space left between each row of bricks, and in order to keep them firm and united, every third brick has a transverse tie-brick. By this novel method of placing bricks, there is a considerable economy; and furthermore, the wall having a space in the centre, it will dry much quicker, and will not be subject to collect moisture from the rain or damp atmosphere.

JOB TAYLOR, of Pendleton, near Manchester, joiner and builder, *certain improvements in machinery or apparatus for cutting or forming ornamental mouldings, or devices in wood, or other materials*, March 18.—This improvement is for cutting mouldings, and for forming the "cups" in gothic arches.

An upright beam, with brackets projecting, supports a vertical spindle, that has a driving pulley keyed on its upper end. The lower end of the spindle has a socket to receive a centering tool, and across this socket is a bar on which two tool sockets are mounted, and are capable of adjustment, by sliding thereon.

The wood for forming the gothic arches is placed on the table, immediately under the spindle, and by the aid of a treadle that lowers and raises the spindle, a gentle depression of the cutting tools, while revolving, will form or cut a circle in the wood. The other curves, or portions of larger circles, in the same device, are formed by a trammel that is placed on the table, and is worked to and fro by the hand of the workman.

The cutting tools for stone are secured on circular carriers.

WILLIAM NEWTON, Chancery-lane, Middlesex, *an improved machine or apparatus for weighing various kinds of articles or goods*, March 18.—The inventor, a foreigner, and major in the Russian service, also a member of the economical society of St. Petersburg, sets forth, that after much labor and perseverance he has constructed a balance weight to supersede all others for its economy and unvariableness.

A pulley has an axle with knife edges, which rest on centres of obtuse-angled steel pieces, let into the bearings of the balance holder. An arm, with a weight at one end, is fixed on the periphery of the pulley. One end of a rope line or chain is fastened near the arm, and passes over the pulley, and the reverse end holds the scale. A stationary quadrant, having a graduated arc on its face, forms the lower part of the balance-holder; thus, when the scale contains any thing to be weighed, the index on the axle of the pulley moves on the face of the graduate arc, and on the vibrating parts becoming quiescent, the index will point to the number of lbs. or ozs.

It will be observed that the power of the weight in the scale draws the rope, line or chain, that is placed round the pulley, and which being equi-distant from the centre axle, causes the weight of arm and counterpoise, to move in equal distances from a vertical position to a right angle.

*** Mr. BOGARDUS requests us to explain what, he thinks, in our last was not sufficiently explained. In referring to his specification of "improved means of applying labels, stamps, or marks, to letters and such other documents"; he says, "the method is to have the labels pierced, so that the wafer, or seal, may lay between the body of the letter and the lap; the act of sealing securing the label by the hole pierced therein."

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of May 2. Each party will receive, in addition, a *private communication* to the same effect.

William Newton, Chancery-lane, civil engineer, due April 24.

James Sutcliffe, Henry-street, Limerick, builder, due April 24.

George Graydon, Sloane-street, Chelsea, due April 24.

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING MARCH 21, 1840.

ENGLAND.

NICHOLAS HOGESIPPE MANICLER, Great Guildford-street, Southwark, chemist, *a new preparation of fatty substances, and the application thereof to the purposes of affording light*, March 20.

ON THE PUBLICATION OF SPECIFICATIONS.

(To the Proprietors of the "Inventors' Advocate.")

GENTLEMEN,—I am instructed by my client, Henry Pinkus, Esq., of Old Slaughter's Hotel, St. Martin's-lane, to reply, on his behalf, to the printed notice addressed to him, intimating that you intend to publish in the "Inventors' Advocate," on the 28th inst., the specification of a patent filed on the 26th ult.

I am advised that my client informed you, that he is now making applications for patents in certain foreign kingdoms, and states, which remain yet unsealed, and cannot yet be completed for a short time. My client has informed you of what doubtless you are aware,—that if printed publication take place before the completion of foreign patents, it wholly deprives, according to the patent laws of such foreign states, the inventor, or his agent, obtaining the benefits of patents.

Should the threatened publication be made by you, my client will sustain large pecuniary loss. He has, it appears, in vain solicited Messrs. Delianson Clark and Co., and Mr. Kidd, the publisher of the "Inventors' Advocate," to abstain for a short time from publishing his specification, which delay cannot be injurious to others, whilst by so doing it will be fatal to his interests.

It may here be pertinent to remark, that the English law that requires the deposit of specifications, and permits the *inspection* of them, does not, however, authorise the *publication* of them, to the injury of the patentee.

My client having been advised that the law will afford a remedy for any injury which, under the circumstances, he may sustain, by reason of such threatened publication, I therefore hereby give you notice, that my client will hold you, and each of you, and all persons connected with the said publication, liable to him, in damages, for any injury that he may sustain by any act of yours or theirs.

I am, Gentlemen,
Your obedient Servant,

WM. MARSH.

67, Newgate-street, March 26, 1840.

Having received this letter late on Thursday, and believing Inventors and Patentees to be vitally interested in the question it involves, we give it ready insertion. It may provoke further inquiry, and do good to the cause we are anxious to serve. To enable our readers better to understand the subject in all its bearings, we refer them to the communication of "J. D.", on a "The Publication of Specifications," which appeared in the "INVENTORS' ADVOCATE," No. 25; and to the reply given to "J. D.", in the "INVENTORS' ADVOCATE," No. 30.

We shall revert to this subject in an early number of our Journal, and, meantime, earnestly request such of our subscribers as can offer any new views of this important question, to favor us with their communications. We have ourselves formed a decided opinion on the matter,—an opinion which, on several occasions, has been supported by facts and argument in our columns. We can see no good reason to change our sentiments. On the contrary, the more consideration we give the subject, the more fully persuaded are we that we are protecting inventors, as a body,

and promoting their individual interests by the course we are adopting. We shall, therefore, steadily and effectually carry out the plan we have laid down, and regardless alike of intimidation, on the one hand, and "tempting offers" on the other, we shall fearlessly perform our prescribed duty.

We cannot dismiss the letter on which we have grounded these few comments, without making an observation on the indecorous manner, to say the least of it, in which Mr. PINKUS has applied to us, in person, to withhold the publication of his specification. He has not only attempted to intimidate our Publisher, in the most overbearing and dictatorial style imaginable, but he has insolently boasted of the "influence" he had used at the Patent Offices to stop our channels of information!! What "influence" Mr. PINKUS possesses, we shall not now stop to consider—though we have an opinion on that matter also—suffice it to say, that we treat both him and his empty menaces, with all the contempt they so fully merit.

FOREIGN PATENTS.—FRANCE.

A LIST OF PATENTS GRANTED BY THE FRENCH GOVERNMENT FROM OCT. 3, TO OCT. 16, 1839.

No. 1. Bayle, Antoine Laurent Jessé, of Paris, Quai des Ormes, No. 60, a patent of invention for 10 years, for new processes of manufacturing cast artificial stones and marbles, Oct. 3, 1839.

2. Blanchet, of Rheims, département de la Marne, a patent of invention for 5 years, for a new card-frame (*battant*) for the purpose of weaving ornamented fabrics, Oct. 3, 1839.

3. Bourcier, Jules, and Morel, George, of Lyon, département du Rhône, a patent of invention for 15 years, for a power-loom, regulating the cross-web in silk-weaving, Oct. 3, 1839.

4. Chapelle, Antoine Stanislas Casimir, and Montgolfier, Achille, of Paris, rue du Chemin Vert, No. 3, a patent of invention for 5 years, for an apparatus on a continuous system for performing the following operations:—1st, finishing paper with size. 2d, for hot-pressing and glazing writing paper, paper for hangings, printing paper, and others. 3d, for producing an even-colored ground in paper for hangings, Oct. 3, 1839.

5. Coitrat, Alexandre, of Paris, rue Sainte Avoye, No. 23, a patent of invention, of improvement, and of importation for a new balance, called "réglateur," Oct. 3, 1839.

6. Delabarre, César Auguste, of Rouen, rue Cauchoise, Nos. 29 and 31, département de la Seine Inférieure, a patent of improvement and of addition to the patent of invention and improvement which he obtained June 29, 1839, for a new weaving loom, called power loom (*metier à la mécanique*), Oct. 3, 1839.

7. Delaveleye, Auguste, of Dijon, département de la Côte d'Or, a patent of improvement and of addition to the patent of invention for 15 years, which he obtained July 14, 1835, for a central regulated steam-engine, Oct. 3, 1839.

8. The Douchy and Epinac Coal Companies, represented at Paris by Besauzon, rue de Richelieu,

No. 102, a patent of improvement and of addition to the patent of importation and improvement which they obtained Jan. 23, 1839, for an excavating machine for coal mines, Oct. 3, 1839.

9. François, jun., Armand, of Nantes, rue de Launay, No. 2, département de la Loire Inférieure, a patent of invention for 10 years, for various objects adapted to whale-fishing, and recovering wrecked vessels (*sauvetage*), Oct. 3, 1839.

10. Huan, Louis, of Brest, represented at Paris by Buron, rue des Trois Pavillons, au Marais, a patent of invention and improvement for new hernia bandages, Oct. 3, 1839.

11. Jérôme, François, of Amiens, département de la Somme, a patent of improvement and of addition to the patent of invention for 10 years, which he obtained Jan. 11, 1837, for a machine for cleaning corn, Oct. 3, 1839.

12. Laurent, Jean Baptiste, of Paris, rue Mandar, No. 16, a patent of improvement and of addition to the patent of invention for 5 years, which, conjointly with Ledru, he obtained May 8, 1839, for a new and simple process of dyeing, without the use of indigo, all wool and woollen fabrics a fine blue, which they call Napoleon blue, and of all shades obtained by the use of indigo, such as dark green, olive, bronze, and other colors, Oct. 3, 1839.

13. Lagard and Dertelle, sen., of Charleville, département des Ardennes, a patent of invention for 5 years, for an improvement in the new system of carbonisation, invented by Fauveau Deliars, Oct. 3, 1839.

14. Machard, Pierre, of Marseilles, quartier des Catalans, département des Bouches-du-Rhône, a patent of improvement and of addition to the patent of invention and improvement for 15 years, which he obtained Feb. 3, 1834, for processes of manufacturing and purifying resinous oils, for the purpose of rendering them fit for combustion in common lamps, for the manufacture of soap, and for being used instead of all fat oils, Oct. 3, 1839.

15. Marchesi, Alphonse, of Paris, faubourg du Temple, No. 16, a patent of invention for 15 years, for machines for manufacturing ordinary inlaid floors, either in mosaic or compartments, in foreign or other woods, for the purpose of producing various patterns, Oct. 3, 1839.

16. Priot, Napoléon, represented at Paris by Lejars Chavannes, rue Saint-Sauveur, No. 7, a patent of invention for 5 years, for the composition of bitumens of different qualities and colors, applicable to paving in general and to building purposes, Oct. 3, 1839.

17. Richaud, Etienne Théodore, of Marseilles, rue de Dominicains, département des Bouches-du-Rhône, a patent of invention for 15 years, for a carriage with drag and bras à clefs, Oct. 3, 1839.

18. Sorel, Stanislas, of Paris, rue des Trois Bornes, No. 14, a patent of invention for 15 years, for new combinations of metals to be employed advantageously, instead of iron and copper castings, Oct. 3, 1839.

19. Vitron, Pierre, of Mermeval, represented at Paris by Doublet and Piquenot, rue Quincampoix, No. 19, a patent of improvement and addition to the patent of invention and improvement which he obtained Sept. 26, 1839, for a new shuttle for continuous looms, Oct. 3, 1839.

20. Callaud, Pierre Philippe, of Paris, rue Montesquieu, No. 6, a patent of invention for 10 years, for a new clock, intended not only to mark time, but also to register, during the absence of the observer, all thermometrical, barometrical, and hygrometrical variations, Oct. 3, 1839.

21. Champion, Etienne Hélaine, of Paris, Quai de Béthune, No. 22, èle Saint Louis, a patent of invention for 5 years, for making pegs by machinery, Oct. 5, 1839.

22. Cellier, Blumenthal, represented by her husband at Paris, at Faure Beaulieu's, rue du Ponceau,

a patent of invention for 10 years, for a complete method of extracting sugar from beet-root, by drying the pulp as it comes from the press, after having expressed it at most 40 or 50 per cent of juice, Oct. 3, 1839.

23. Durand, Pierre Louis, of Paris, rue de Charenton, No. 18, a patent of invention and improvement for 5 years, for a new process of manufacturing wholly by machinery stocking-frame needles, Oct. 3, 1839.

24. Erard, Pierre Orphée, of Paris, rue du Mail, No. 13, a patent of invention and improvement for 10 years, for an apparatus applicable to all kinds of pianos, Oct. 3, 1839.

25. Geanty, jun., Louis, of Limoges, rue Saint Martial, a patent of improvement and of addition to the patent of invention for 5 years, which he obtained June 22, 1837, for a gun to be loaded at the breech, Oct. 3, 1839.

26. Laurent, Brothers, of Toulouse, a patent of improvement and of addition to the patent of invention for 5 years, which he obtained Feb. 3, 1839, for an eccentric syringe, Oct. 5, 1839.

27. Martin, Emile, of Paris, rue des Marais Saint Martin, No. 28, a patent of invention and improvement for 10 years, for the manufacture of vermicelli and dough with gluten obtained in making starch, and the improvement of dough by the addition of such gluten, Oct. 3, 1839.

28. Molinié, Louis, of Paris, Hôtel d'Orléans, rue de Richelieu, No. 17, a patent of invention for 15 years, for a new means of diminishing the friction of wheels on fixed axles, and the application of the same means to wheels on revolving axles, Oct. 5, 1839.

29. Montgolfier, Brothers, Achille and Alexandre, of Paris, the first, rue Feydeau, No. 7, the second, rue de Seine Saint Germain, No. 14, a second patent of improvement and of addition to the patent of invention for 10 years, which they obtained Feb. 7, 1839, for paper made from wood, and for wood bitumen pasteboard, and for various applications of these products, Oct. 5, 1839.

30. Muller, Louis, of Lyons, rue Saint Dominique, Passage Coudière, a patent of invention and improvement for 5 years, for a horn with two piston rods, Oct. 5, 1839.

31. Pécholier, Jean Thomas, of Belleville, Grande rue de Paris, in the precincts of Paris, a patent of invention for 5 years, for the composition and manufacture of a stucco for preserving from damp, and which he calls "conservateur."

32. Pousse, Pierre Isidore, of Paris, rue Montmartre, a patent of invention and improvement for 5 years, for new moveable backs and buks for corsets, Oct. 5, 1839.

33. Simon, Jean Baptiste, off Paris, rue des Diamants, No. 25, a patent of invention for 5 years, for cambering the upper leathers of boots, Oct. 5, 1839.

34. Tissier, François Louis, and Beugé, George Nicolas, of Paris, rue des Vieux Augustins, No. 64, a patent of invention for 15 years, for a new lock, without a key, Oct. 5, 1839.

35. Viltard, Constant Joseph, of Paris, rue Saint Sébastien, No. 11, a patent of invention for 15 years, for a new soap, called "Viltard," and for the processes employed in the manufacture thereof, Oct. 5, 1839.

36. Vaudoiset, Pierre, and Couturier, Roger Joseph Nicolas, of Paris, the first, rue de la Corderie du Temple, No. 23, the second, rue du Puits Vendôme, No. 9, a patent of invention for 5 years, for the making of calf skin colored shoes in general, and for a polishing blacking, Oct. 5, 1839.

37. Badon, Jean Jacques Alexandre, of Paris, rue Saint Honoré, No. 373, a second patent of improvement and addition to the patent of invention for 15 years, which he obtained August 24, 1839, for 1st, a new method of paving; 2d, for the manufacture of Asphalitic bricks, Oct. 12, 1839.

38. Besancenot, Pierre Dominique, of Paris, rue

Saint Anastase, a patent of invention for 5 years, for a means of preventing the explosion of gases, Oct. 12, 1839.

39. Eparvier, Pierre, of Condrieu, a patent of invention and improvement for 5 years, for a machine consisting of a double helm for the more safely steering and guarding vessels against accidents, Oct. 12, 1839.

40. Lagard, sen., of Charleville, a patent of improvement and of addition to the patent of invention for 5 years, which he obtained, Sept. 9, 1837, for a method of carbonising wood by means of the flame which escapes from furnace and forge fires, Oct. 12, 1839.

41. De Pebrer, Paul, of Paris, rue Louis le Grand, No. 22, Hôtel de la Manche, a patent of improvement and of addition to the patent of importation and improvement for 5 years, which he obtained July 20, 1839, for a self-regulating economical heating apparatus, which he calls "calorifère à manomètre," Oct. 12, 1839.

42. Rigolet, Pierre Félix, of Paris, rue Haute-seuille, No. 5, a patent of invention and improvement for 5 years, for compasses, called "compass rigolet," for taking the exact measure of the foot, Oct. 12, 1839.

43. Roucou, Joseph, and Reclus, Auguste, both of Paris, passage Brady, escalier D, and Carville, Félix Auguste Joachim, of Paris, rue des Arcis, No. 2, a patent of improvement and of addition to the patent of invention and improvement for 10 years, which they obtained Sept. 5, 1839, for mechanical contrivance on the principle of a continuous jet, applied to syringes in general, applicable to portable jets-d'eau, pumps, &c., and to all purposes where a continuous jet is required, Oct. 12, 1839.

44. Salmon and Co., of Lyons, represented at Paris by Fournel, allée des Veuves, No. 8, a patent of invention for 15 years, for furnaces and apparatus for the purpose of obtaining ammonia, bitumen, and hydrogen gas in manufacturing coke, and of applying to useful purposes the heat arising from the manufacture, Oct. 12, 1839.

45. Bernhardt, Mas, of Paris, at Gohier Desfontaines, rue Feydeau, No. 28, a patent of invention for 5 years, for processes of manufacturing magma-lith and analiths (imitation of fossils and half precious stones), of printers' ink and charcoal, in connexion with a system of heating and illuminating, called the Phoenix system, Oct. 16, 1839.

46. Cousin and Son, of Bordeaux, rue Esprit des Lois, a patent of improvement and of addition to the patent of importation and improvement they obtained June 6, 1839, for a compound lever windlass, Oct. 16, 1839.

47. David, Claude, of Avenue de Saint Cloud, barrière de l'Etoile, département de la Seine, a second patent of improvement and of addition to the patent of invention and improvement for 15 years, which he obtained Sept. 28, 1836, for new machinery for making casks, Oct. 16, 1839.

48. Dumont, Julien Jacques, of Paris, rue du Faubourg Saint Martin, No. 102, a second patent of improvement and of addition to the patent of invention for 10 years which he obtained Jan. 23, 1839, for a new process of clarifying sugar and syrup, Oct. 16, 1839.

49. Festugière, Jean Noël, of Bordeaux, Quai de Bourgogne, No. 99, a patent of invention for 15 years, for a mixture of metals for naval and other purposes, Oct. 16, 1839.

50. Godard, Jacques Prosper, of Paris, rue des Mauvais-garçons Saint Jean, No. 9, a patent of invention for 15 years, for a new product, which he calls extract of beer, Oct. 16, 1839.

51. Jouanne, Augustin, Rue Neuve du Luxembourg, No. 10, and Salomon, Israel and Levi, Cour Batave, No. 12, all three of Paris, a patent of invention for 5 years, for an inkstand, which they call "bivalve," Oct. 16, 1839.

52. Josselin, Jean Julien, of Paris, rue du Ponceau, No. 2, a patent of invention and improvement

delivered to him April 14, 1839, for mechanical corsets, equally applicable to hygiene and orthopædia, Oct. 16, 1839.

53. Klein, Félix Joseph Casimir, of Strasburg, represented at Paris by Hingray, rue de Seine, Saint Germain, a patent of improvement and of addition to the patent of invention and of improvement for 15 years, which he obtained Sept. 20, 1823, for a new economical system of boot and shoe making, Oct. 16, 1839.

54. Klispis, François, of Paris, rue Sainte Croix de la Bretonnerie, No. 25, a patent of invention for 5 years, for manufacturing metallic bitumen applicable to covering buildings, to roofing terraces, pavements, and coating walls, Oct. 16, 1839.

55. Montgolfier, Brothers, Achille, Alexandre, and Amédée, of Roanne, a patent of improvement and of addition to the patent of invention for 10 years which he obtained Feb. 7, 1839, for paper made from wood, and for wood-bitumen pasteboard,

and for various applications of these products, Oct. 16, 1839.

56. Oram, Thomas, of London, represented at Paris by Jollivet, rue Jacob, No. 46, a patent of invention, of importation, and improvement for 15 years, for manufacturing and preparing various kinds of coal, Oct. 16, 1839.

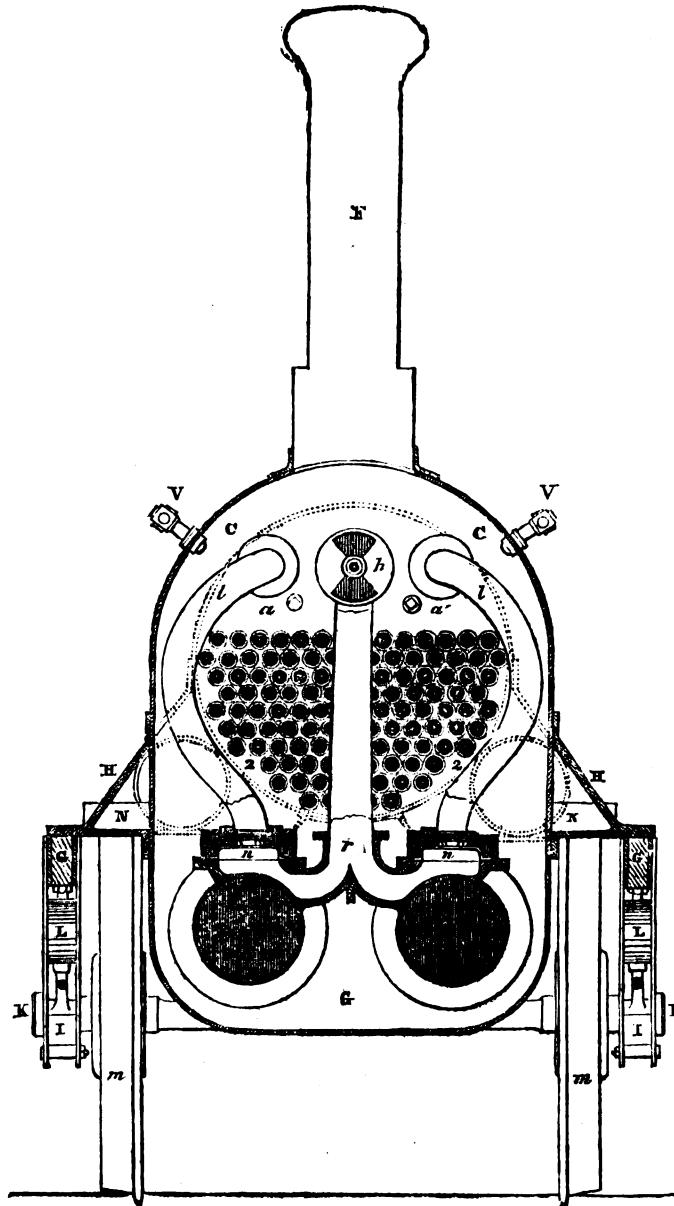
57. Perrier, Georges, barrière de Monceaux, No. 12, aux Batignolles, in the precincts of Paris, a patent of invention for 15 years, for a process of washing and pounding, by means of moveable and economical metallic plates, all substances used in the manufacture of paper and pasteboard, Oct. 16, 1839.

58. Rambuaux, Claude Victor, of Paris, rue Saint Marc Feydeau, No. 6, a patent of invention and improvement for 10 years, for a new system of bridges and sounding-holes (voutes et éclisses), applicable to all kinds of instruments, such as violins, alto, violoncellos, contre basses, &c., Oct. 16, 1839.
(To be Continued)

IMPROVEMENTS IN LOCOMOTIVES.

BY A. LIVINGSTONE, ESQ.

No. 7.—SECTION OF SMOKE-BOX.



The Letters in the above Engraving, have before been explained—for their Signification, the reader is referred to our earlier numbers.

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.

THE RENEWAL OF THE CHARTER OF THE BANK OF FRANCE.

The origin of the Bank of France dates from the year VIII. of the republic. In the first instance, it was nothing more than a free association of citizens and capitalists, similar to the Joint Stock Companies established in England. Its capital consisted of thirty millions of francs, divided into thirty thousand shares of 1,000 francs each. Its operations were precisely those of other establishments of this nature. The only new disposition observed in the statutes of the year VIII. was the establishment in the banking house of an office for deposits, in which every sum above 50 francs was received for reimbursement at certain conventional epochs. The bank paid interest on these, and met the demand of the bearer, or paid to his order. It was only on the 24th Germinal, year XI., that the Bank of France was invested by the legislature with the exclusive privilege of issuing notes. This privilege was an order for 15 years, to date from the 1st Vendémiaire, year XIII. It imposed on the "Caisse d'escompte du Commerce," the "Comptoir Commercial," the "Factorerie," and all other associations which issued at that period bank notes, the obligation of withdrawing all their paper from circulation. The capital was increased from 30 to 45 millions.

In 1806 Napoleon extended the duration of this privilege by 25 years, the capital being at the same time increased to 90 millions, exclusive of the funds in reserve. By the same decree, the interior organisation of the Bank was regulated upon certain bases, which exist for the most part at the present time. The establishment by statute was to possess a Governor and two Sub-Governors, each under the nomination of the Chef d'Etat.

The Bank is only privileged as a Bank of Circulation, that is to say, it has the power of issuing payable at sight to the bearer, but not of compulsory currency. In all its other operations, it is not on any more favored footing than private establishments.

When the Bank was created, money was at 12 per cent., and its influence on commercial relations has contributed to reduce, very considerably, the rate of interest, and, what is equally important, to maintain an equilibrium in the value of capital put out at interest. Very few states have enjoyed so perfect a regularity, and one so eminently necessary to the operations of industry. The Bank of England has often raised its discounts to 6 and even 8; while about a fortnight since it reduced them to 5. At Philadelphia, the great financial centre of the Union, interest has been carried to 3 per cent. per month, because the Bank, from its organisation, was unprovided with the means of regulating the money market.

The Bank has notes, at present, in circulation to the amount of 210 millions. In 1817 it averaged a circulation of 68 millions only, but, although the increase during these twenty-three years has been prodigious, the Bank of France is still far behind the Bank of England, and the Bank even of Philadelphia. The currency of the Bank of England is not less than 20 millions sterling, or 500 million francs; notwithstanding which, specie is much more abundant in France than in England. Messrs. Colmont and Dumas, in their report sent in to the commissioners of the mint upon the amount of the metallic currency of Europe, state that, of seven billions, the total of that currency, three billions are exclusively of French coinage. Notwithstanding the many advantages that these gentlemen must have possessed in effecting their calculations, it must not be considered that such a conclusion is rigorously exact; but we are bound to consider the

metallic currency of France* to preponderate prodigiously over that of the richest states of Europe or America. The French people are much more favorable to a circulation of specie than to a paper money; and the Bank has therefore, perhaps, hitherto done wisely in not running the risk of sacrificing its material interests by combatting a popular feeling so universally and so deeply rooted. We cannot, for our own part, look on this exorbitant mass of metallic currency as a proof of superiority over other nations, knowing, as we do, that a country is powerful only in direct ratio to its credit. England might, in reality, hold by far the best position, under given circumstances, if her credit were found to be more solidly based than our own. Credit has been not inaptly compared to the sucker of a pump; it draws up from the interior capital in abundance, and in exact proportion to a nation's necessities, it will even draw out specie from the enemy's own country. Thus, were a war to break out between France and England, and from certain disastrous and unforeseen events the credit of the French government received a check, or indeed inspired only less confidence than the credit of the British government, would the preponderance of specie now circulating in France avail her in such a crisis? Certainly not. Specie would be everywhere drawn in, hoarded up, or flow in secret and invisible channels, many of which would conduct it directly into the hands of the enemy. Specie is but a brute commodity, notwithstanding the national emblems which it manifests outwardly, it possesses no nationality.

The canal to unite Marseilles and Dunkirk, or the Mediterranean and the North Sea, is under the serious consideration of Government. Mons. Villeneuve in his communication thus expresses himself: "In tracing out upon the map of France the course of this gigantic channel, we are compelled to consider it destined to become the most active and flourishing of all the canals of the kingdom. It must pass through the coal districts of Valenciennes and St. Etienne; through the centre of our principal wine countries, Burgundy and Champagne; and our most important departments for mineral productions, and iron foundries, La Haute Marne, La Haute Saône, and La Côte d'or; through some of our principal manufacturing cities, Lyons, Rheims, St. Quentin, Lille; in the neighborhood of several others, equally considerable, Abbeville, Amiens, Roubaix, Sedan. It must meet and cross in its course our most important canals; at Beaucaire, the Canal du Midi; at Chalons sur Saône, the Canal du Centre; further on, the Canal de Bourgogne, and the Canal of the Rhone and Rhine, the Havre and Strasburg Canal, and the Canals of the Ardennes, the Sambre, and the Somme.

PRICE OF COALS PER TON AT VARIOUS MANUFACTURING DISTRICTS IN FRANCE.—In the département du Nord, 10 francs; at Creuzot, 7 francs; at St. Etienne, 7 francs; at Fourchambault, 25 francs; at Alais, 6 francs; at Decazeville, 6 francs; at Hacganje, 25 francs; in the department of the Haute Marne, 55 to 60!

The price of coals in the valley of the Marne will be considerably reduced, should the projected canal be carried into effect, which is intended to unite the Marne and Soane, and consequently the price of iron throughout France. In the valley of the Marne there are 76 melting furnaces for iron ore; 83 foundries for cast-iron; and 36 puddling furnaces.

* It was estimated in the year 1832, that the proportion of specie circulating in France and England, was as 11 to 1.
—Ed.

BELGIUM.

The works for the improvement of the city of Brussels are about to be recommenced with increased activity, the weather being considered sufficiently fine to warrant the continuance of the undertakings suspended during the winter. The following is but an abridged list of them:—the gallery of St. Hubert, a magnificent arcade, destined to unite the Rue de la Madeleine with the square of the Grand Opera, is to be begun forthwith. The Casino Rouppe, so called after the late Burgomaster, is to be established on the site of the late Lloyn's. The new quarters *extra-muros*, of Leopold and Louise, are to progress. A magnificent Palace of Justice is to be erected in the *Quartier Leopold*. A barrack, with a noble frontage, is already under erection, and proceeding rapidly. The unfinished pavilion of the Palace of Industry, is to be completed. A vast market is to be erected on the low ground, by the side of the middle of the Rue Royale, but so as not to interrupt the splendid panoramic view of the city from this spot. The ruins of the ancient Hôtel of the Minister of Justice, are to give place to a slightly building. The new grand entrance into town, by the Porte de Louvain, is to be forthwith constructed, to replace as a thoroughfare the old Rue de Louvain. The public abattoirs are to be shortly opened. The colossal statue of Prince Charles is to be erected on the Place Royale, and in a few months will be opened the magnificent Hospital of St. John, on the Boulevards. This hospital will be the finest in Europe.

Belgium can now enter into competition with England, France, and Germany, for the materials of railroad lines. The causes of the lowering the price of iron rails are numerous,—

1stly.—Because iron ore, once so dear, has become common at a very low price, every one having sought for it, and every one having found it in abundance.

2dly.—The productions of the vast foundries of Couillet have increased so much under a better administration, that they have been able to furnish lately the rails for the government contracts at 30 per cent. less than former prices, with an increase of profit to the company.

3dly.—Labor, which formerly cost 75 francs per hundred rails, now costs but 5 francs, from a new process, not long since introduced in the establishments.

That the demand will go on progressing is beyond a doubt, from the many plans on foot for introducing iron into architecture, bridge building, and the construction of steamers and canal boats.

Belgium is now awakening from her momentary torpor; her arteries, coal and iron, are rebounding under the touch of capital.

HOLLAND.

We read in the *Handelsblad*, that about the middle of next month, the *Landboot-Dietz*, constructing in the workshop of M. Goeders, will be put on the Amsterdam and Utrecht road, for the transport of passengers and luggage.

This boat carriage really has a grand appearance; it will accommodate forty travellers; it moves upon ten wheels, and will be drawn by four horses. Merchandise and heavy luggage will be placed in an extra four-wheeled vehicle attached to the former.

This curious vehicle, constructing under the personal direction of M. Dietz, will only enter the suburbs of these cities; omnibuses will there await it, to convey passengers to their houses within the walls.

GERMANY.

By correspondence from Fribourg we learn, that at about three leagues from this city, in the forest of Bugerwald, on the north bank of the Beira, there exists a quarry of gypsum, which has been worked for some years past.

It had been several times remarked, that there issued from various fissures in the rock, at certain intervals, a violent current of air, which considerably annoyed the workmen. No attention was paid to this, as it was attributed to the infiltration of air through the numerous fissures by which the rock is every where streaked; when, all of a sudden, this aërial fluid ignited, and the combustion has gone on for the last eight days.

A workman having approached a part of the quarry with a lighted stick, had scarcely time to remark a whizzing sound proceeding from one of the fissures, when he found himself immediately surrounded by flame, which speedily communicated itself to his clothes and hair, which were in an instant scorched to a cinder.

From that day forward, the volcano has continued to burn, darting out flames from three to four feet in height, which, as soon as night falls, are distinctly visible from Fribourg. Every thing tends to the presumption that there is a reservoir of hydrogen in the very heart of the mountain, to which the working of the quarry has given issue.

Here nature presents us with an imitation of what art has not many years discovered, and practically applied, with this slight difference, that the supply has been turned to profit only by the laborers of the quarry of the Burgenwald forest, who now daily make use of it for the preparation of their food. This event will doubtless interest geologists in the highest degree, and will afford them a fertile subject for study and observation.

POLAND.

A letter from Warsaw, dated the 3d March, addressed to the *Universal Gazette of Leipsic*, contains the following paragraph:

"Mr. Cockerill, the celebrated Belgian manufacturer, has, during his short stay here of merely a few weeks, projected some very daring enterprises. It is well known that he is selling off his establishment at Seraing, and that he is about to assume the direction of the iron foundries of the bank of Poland, at Warsaw. He calculates upon furnishing Austria with supplies from his manufactory, at a much lower rate than they have ever been obtained at hitherto, principally on account of the low price of iron and labor in the kingdom of Poland. One thing however is necessary, and even indispensable; namely, a railroad from Warsaw to Cracow, to facilitate the transit of these supplies into the Austrian states. This railroad is to be put forthwith into execution."

Also, a railroad from Warsaw to the Baltic is to be immediately undertaken, by means of which the trade with Asia will take another direction. These vast plans of improvement, as must be confessed, appear somewhat fabulous, but they are in serious train, and no obstacle whatever has been, or is at all likely to be thrown in the way of their execution. Another improvement to Warsaw, and less gigantic, proposed by Mr. Cockerill, is the construction of a chain bridge across the Vistula, to unite this city with the opposite bank of the river. The height of this bridge will be 40 feet above the highest water-mark, which will allow of the passage of the numerous and immense blocks of ice which float down the river at certain seasons of the year, without any apprehension of its being endangered.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
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Brazil	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Heligoland	St. Lucia
Caracas	Honduras	St. Vincent's
Carthagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Columbia	Laguayra	Trinidad
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Cuxhaven		

It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their News-men, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 8, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"H***y."—If B. sells his patent right in an invention, to A., and C. manufactures and sells a precisely similar article, after B. has secured his patent, B. can bring an action against C., and recover damages.

"J. B." Liverpool.—We are sorry for our Correspondent, but cannot in any way assist him; his experience is dearly bought.

"An Inventor."—Certainly not—such a circumstance would be reckoned an infringement.

"Amicus."—The specification, not being enrolled in time, makes the patent void.

"A shareholder."—You have no means of redress. We shall discuss the question in a future number.

"G. B."—It is impossible, seeing that the patent has expired.

"N."—By all means; but keep it as secret as possible, till you have secured it by patent.

"Theatricus" will find our opinion of this young lady recorded at length, in No. 17, page 270, Vol I.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSOON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY-LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE
INVENTORS' ADVOCATE,
AND
JOURNAL OF INDUSTRY.

SATURDAY, MARCH 28, 1840.

We have inserted in another part of our Journal a report of proceedings in the Vice-Chancellor's Court, on Saturday, on an application for an injunction to prohibit a manufacturer at Birmingham from availing himself of a process of gilding and silvering metals, which had been patented by the plaintiff, also a manufacturer in the same town. The nature of the process consists in applying the gold in state of solution instead of its being amalgamated with mercury, as in the ordinary mode of gilding. To facilitate the precipitation of the gold from its solution, some kind of salt is requisite. The patentee mentions in his specification two or three salts, which he had found best adapted for the purpose, but, with the view of protecting himself from the possible invasion of his patent right, by the employment of some other salt that might be found to produce similar effects, he adds, "or any other convenient salt." The case, when it came for hearing before the Vice-Chancellor, involved several points usual in disputed claims to new inventions, but the principal difficulty, on the part of the patentee, arose from this vagueness in the specification.

We have, in our series of articles on the Patent Laws of England, frequently urged the importance of explicit descriptions in specifications, and the case to which we now allude affords a cautionary example. The use of the term, "or any other convenient salt," was considered by the Vice-Chancellor too vague a description, inasmuch as there are 5,000 different kinds of salts. It was urged, on behalf of the plaintiff, that the specification was amply sufficient to enable any person, by following the directions it contained, to complete the process in the best manner known to the patentee. The Vice-Chancellor, however, refused to interfere for his protection, and left him to seek his remedy in a court of law.

It seems to us, judging from the published report, that the patentee, in this case, has

been harshly dealt with. If justice and common sense had to decide the question, freed from nice legal technicalities, and legal prejudice, it appears that to all intents and purposes, the description of the invention was sufficient for the interests of the public. The patentee is bound to disclose the whole process of the manufacture for which he claims the monopoly, so that when the term of his exclusive usage ends, his invention may become generally available. It seems that he did so in this instance; he mentioned particularly the salts which he believed to be the most advantageous, and the words, "or any other convenient salt," were introduced merely to guard against the piracy of his invention by the use of some other salt that might answer nearly as well. The great feature of the invention was not the precipitation of the gold from its solution by any particular salt, but that peculiar mode of applying the gold to the surfaces of other metals. The specious objection, therefore, that the plaintiff was attempting to appropriate to his exclusive use 5,000 kinds of salts, was more like a legal quibble than a true statement of the fact.

This case affords another example of the difficulties which beset patentees, and of the discouragement which the law presents to inventive genius.

The patentee, in his anxiety to prevent the pirating of his invention, has apparently over-shot his mark, and become involved in legal difficulties. He ought, after having stated distinctly the particular kinds of salt he used, to have mentioned the nature of their action, and then to have comprehended in his specification all the salts possessing similar properties. Too much care cannot be bestowed on the drawing out of the specifications, which ought never to be done without consulting practical scientific men, and legal advisers, well versed in the patent laws. In the present unsatisfactory state of these laws, the honest patentee, who wishes to claim no more than his due, and who desires to communicate the whole results of his experiments to the public, may, nevertheless, without great caution in making out his specification, find himself entangled in the meshes of the law, and after having been at the expense of obtaining a patent, it may prove of no avail against fraudulent infringements.

AERIAL NAVIGATION.

In a former article on aerostation viewed as a means of loco-motion, we alluded to the ad-

vantage to be gained by connecting balloons with the ground, by means of *aerostatic rail guides*. We then promised to return to the subject, which was only briefly hinted at, and that promise we now propose to fulfil.

All attempts hitherto made to guide balloons, have failed from the want of a resisting force to counteract the power of the wind. The gravitation of the car and its contents, might possibly be made available to some extent for this purpose, but we apprehend that it would be found of little effect, even in light breezes, and of none whatever in the ordinary velocities with which the air moves in the higher regions of the atmosphere. A resisting force might, indeed, be gained by increasing, by mechanical means, the force with which the car is drawn towards the earth. In our remarks on the practicability of flying, we mentioned a small instrument that we had contrived, consisting of a revolving vane, by which bodies might be raised in the air by their own action; and it would appear from the accounts since published of experiments made by Mr. Green, that he intends adopting some such plan, with a view to gain a guiding power over his balloon in his proposed aerostatic voyage across the Atlantic. We are of opinion, that any attempt to guide balloons by the direct action of such a machine must fail, from the want of a resisting force to maintain the vanes in the proper position to act against the wind. If, however, such an apparatus, on a sufficiently large scale could be constructed, and were made to act in opposition to the ascending power of the gas, the additional counteracting force thus gained, might be employed advantageously in keeping the head and sails of an aerial ship towards the wind. The large surface of the balloon, however, offers so much resistance to the air, that it is very questionable whether, even by means of such a counteracting power, any practical advantage could be gained in guiding the course of the balloon. We revert, then, to our first-named proposition, that of *aerostatic rail guides*.

An aerostatic rail guide, such as we propose, need consist of merely a rod of iron, supported at a height of about two feet from the ground. Two small wheels, with deep grooves, might be united by a connecting bar, at a distance of twenty feet apart. These wheels would run under the rail guide, and the balloon might be fastened to each end of the connecting bar by ropes, from fifty to a hundred feet in length. We must suppose our balloon to be an elongated one, so as to

present the least possible surface of resistance to the wind; and there must be attached to it, or to the car, expansive sails, capable of being placed in any direction at the will of the aerial navigators.

The apparatus being so arranged, the ascending power of the gas would force the grooved wheels against the guide rod, and they would move freely under the rail, either forwards or backwards, as they were impelled by the action of the wind on the balloon; the balloon being kept suspended above the rail, at a height of fifty or a hundred feet, according to the length of the ropes. The head of an aerostatic ship, thus bound down to *terra firma*, and yet capable of motion in a given line, might be kept steadily to any point of the compass, and the sails might be set so as to re-act on the wind with the greatest advantage in changing the direction of its force. Our aerial vessel could make no *lee way*, as a ship does in water, but it would be limited in its motion either up or down the guide rail; therefore, we anticipate that it would be able to sail much closer to the wind than a ship at sea.

The expense of these rail guides would be comparatively trifling. There would be no waste of land, no levelling would be required, and the whole cost would be confined to the value of the iron and the labor of fixing. A single aerostatic rail guide from London to Liverpool might, we conceive, be constructed for 100,000*l.* To render such a plan available, however, as a practical means of locomotion, the country should be traversed with such guides, in order to take advantage of the wind from whatever quarter it blew. Supposing, for instance, that Liverpool was the place to which we wished to be conveyed, and the wind was blowing "in our teeth." The aerial ship could not, consequently, sail in the direct course, it must *tack* to Cambridge—thence, by another tack, it might arrive at Birmingham; from Birmingham, the voyagers would be obliged to direct their course again eastward, say to Leeds, and from that town they might bend their sails direct for the destined port. This, however, is putting the case in its most difficult point of view, and few persons would be disposed to commence a voyage with the prospect of being carried to such various parts of the country; but we might fairly assume, that four days in the week, on an average, the voyage might be undertaken with the reasonable expectation of sailing direct to the point required. The advantages of establishing a means of communi-

cation by aerostatic ships, would be manifold. It would, in the first place, be attended with no expense of fuel, or of horses, with little or no wear and tear of machinery or of roads, and the motion would produce as little fatigue as a steam ship in still water. The balloon might be made perfectly air-tight, and be kept constantly inflated, and ready for its voyage, on a minute's notice—the voyagers having only to step into the car, whilst the "captain" loosened the ropes to obtain the requisite elevation, and set his sails to the wind.

We are aware that many of our readers will be of opinion, we have been indulging in speculations more fanciful than practical. We have written rather in a spirit of badinage, in deference to their opinions; but we are perfectly serious in stating, that we conceive the plan of aerostatic rail guides to be capable of practical application, and we conceive that it would afford the most effectual way of making the suspending power of hydrogen gas available in loco-motion.

Since writing the above, we have seen Mr. Green's apparatus, which is now exhibited at the Polytechnic Institution, Regent-street. It consists, as stated in the accounts before published, of a vane, similar in its principle and action to the one we suggested in a previous article. In this experiment, the vane is made to revolve very rapidly, by means of a strong spring. It is placed in the car of a small balloon, and the vane rotates vertically, so that the two inclined surfaces, of which the vane is formed, by their action on the air, tend to propel it in the direction of its axis. On the opposite side of the car, is placed a vertical piece of pasteboard, to act as a rudder. A string, to which a small weight is attached, touches and trails along the ground to serve the same purpose as the "guide rope." When the vane was put in motion, the balloon instantly obeyed the propelling impulse, and moved along horizontally. The least current of air, however, changed its course, and it could not be made to traverse in a straight line across the lecture room of the institution. The balloon answered to the rudder, and moved to the right or the left, as the rudder was placed, but it did not keep in a straight course. Though Mr. Green's experiment is, therefore, successful, so far as to give a motion to the balloon, independently of the wind, which may, under certain circumstances, be very essential to the safety of an aeronaut—yet, the result confirms our opinion, that it will be impracticable to obtain a power of guiding balloons

against the wind, unless they obtain a resisting force, either by connection with the ground, or by some mechanical means directed with a view to gain that resistance.

In another point of view, however, Mr. Green's application of this apparatus will prove highly valuable, as it will afford the means of ascending or descending at pleasure, without losing gas or ballast. When the vane was made to move horizontally, so that its propelling power was directed upwards or downwards, its action was most satisfactory, and fully answered the object. By this mode of applying the power, the balloon, when weighted with ballast so as to make it rather heavier than the air, was raised to the top of the lecture room; and by reversing the motion of the vane, when the ballast was taken out, its ascending power was checked, and it was brought to the ground. The attainment of the long desired power of causing balloons to rise and descend at pleasure, will form an important epoch in the history of aerostation, and will, we conceive, be the means of rendering balloons available in many ways as a means of communication.

We understand that it is Mr. Green's intention, if the necessary preparations can be completed, to take his aerial voyage across the Atlantic in July next. Two other gentlemen will accompany him in his adventurous undertaking.

NEW INVENTIONS.

IMPROVEMENT IN OMNIBUSES.

Several correspondents have lately suggested a very convenient addition to the interior of an omnibus. We have seen the plan already adopted in several cases, but it is not generally so. One correspondent says: "Those persons who are in the habit of using this method of conveyance have, no doubt, often felt the want of a something on which they might hold when they have just entered. To remedy this, let a rail run longitudinally down the centre, depending an inch or two below the roof of the 'buss.' The driver generally drives on immediately you are on the top step, not allowing you time to seat yourself, rendering it absolutely necessary that you should receive some support till you are fairly seated; which support is now obtained at the expense of many annoyances to your fellow passengers, and which I think might be entirely obviated by the adoption of this simple expedient." —*Mechanics' Magazine.*

A NEW DISCOVERY IN ARTILLERY.

A Swedish engineer has just invented a method of making cannon, by which he diminishes 50 per cent. of their weight, and increases 50 per cent. their resistance to explosion.

This new ordnance is transportable upon the backs of horses or mules, and consequently will be found of immense utility in campaigns.

Having offered his invention to all the constitutional governments in Europe, for a pension, varying, according to the relative importance of each state, from £40 to £400 per annum, he received

from all, answers to this effect; that as soon as one country adopted it, the rest would have it for nothing, and besides that, there would be no advantage to any one country, if all the rest adopted it.

This ordnance, when charged to the very mouth, is incapable of explosion. It has been tested in this respect in so many countries, and on so many occasions, that there is no doubt of the fact. Granting, therefore, that it were universally adopted, it would not fail to benefit, to a considerable extent, each country individually.

The inventor has recently set out for Alexandria, where, doubtless, he will meet with a more favorable reception from the clear sighted and enterprising old Pacha, than has been accorded him by the constitutional governments of Europe.

A NEW TISSUE.

Mons. Julien, of Paris, has just introduced a new tissue, of exquisite lightness and delicacy of texture, much used in China, and fabricated from the filaments of the *Urtica Nirea*. In the dialect of Canton it is called A-pou, which signifies summer cloth.

In the southern parts of China this tissue is as much esteemed as the finest silks, on account of its durability, united to the qualities above mentioned. The piece we have examined is equal to the finest muslin we have ever seen.

Last year Mons. Adolphe Brogniart received from China a certain quantity of the seed of this plant; unfortunately it does not flower in our climates. This is much to be regretted, for the plant once developed, requires no further attention; it is a vivacious plant, and resembles in its vegetation the common osier. If grounds could be well covered with the *Urtica Nirea*, and the plants cut down in the proper season, they would shoot forth anew, and there would be always a sufficient crop. Perhaps in the south of France this shrub would flower, and admit of general cultivation; in such case, it would become a most important acquisition to industry. The attempt, however, will be made, and Mons. Julien engages to find in certain Chinese works placed at his disposition, the details of the preparation the plant undergoes in China previous to its being proper for the loom.—*Paris paper.*

NEW CAST-IRON BRIDGES, TO REPLACE SUSPENSION CHAIN BRIDGES.

The object M. Marcellis has had in view, is to construct a series of joints in long cast-iron beams, placed side by side across a river, resting upon simple basements at either bank, and at certain intervals upon piles in the stream itself, where this is large. These joints are calculated to give to the whole beam an uniform strength, and to render them capable of supporting a weight equal, and even superior, to that sustained by the best constructed arched-bridges, while this new horizontal bridge will be less expensive, and exempt from the inconvenience of the balancing or oscillation of chain bridges.

In the pamphlet just published, conjointly by M. Marcellis and his colleague, Mons. Duval, the soundest arguments are brought forward in support of this new theory. New theory, however, is not the word, it being in short the idea of a bridge according to its most primitive simplicity; one which a native Indian would employ if he had the materials at his disposition, for it is as simple as the throwing a tree across a brook; so simple, in short, that a transcendent engineer would never have thought of it.

If the bridge of Mons. Marcellis be adopted, adieu to the learned and complex art of cutting stones, according to geometrical principles, and the formation of wedge-wised arches. The first working founder will cast you a bridge in one day, and the next you may walk or drive over it.

Had the ancients been able to cast in a mould parapets of 50 tons at one melting, they never would have amused themselves by inventing bridges with stone arches, as admirable, certainly, as ant-hills, but which must now yield to bridges of inoxidisable cast-iron, as the distaff has yielded to the mill-jenny.

Mons. Marcellis is more fortunate than he at first thought himself. Two boards placed edge-wise, instead of flat, will give a correct idea of the bridge for which he has been studying to find a system of solid joints, considering these iron planks in long bridges as requiring, of necessity, to be made up of several pieces; but within the last few days only, a director of one of the great iron foundries of Charleroi, has engaged to cast these iron planks in one piece, were they required of 60 tons weight, or of 100 feet in length.

RAILWAY INTELLIGENCE; DOMESTIC AND FOREIGN.

LONDON AND DUBLIN RAILWAY.—A numerous and influential meeting of the inhabitants of Ludlow and its vicinity, was held a few days since, at the Town Hall, for the purpose of adopting measures for co-operating with the Worcester Chamber of Commerce in obtaining the necessary surveys of the above line of railway. A deputation, consisting of Messrs. Varden and Williams, attended from Worcester to afford information connected with this subject. The Mayor of Ludlow having been called to the chair, Mr. E. Leader Williams said he had been deputed by the Worcester Chamber of Commerce to solicit the assistance of the inhabitants of Ludlow in bringing before the notice of her Majesty's Commissioners the very important advantages of a line of railway connecting the metropolis of England with that of Ireland, *via* Worcester, Ludlow, and Port Dynllaen. After advertizing to the importance of railway communication to the prosperity of the agricultural and manufacturing districts of the country, he observed that the advantages of the line of which he appeared as the advocate, over those which might be considered as competing lines, were, in the first place, that it was a continuation of the Great Western, and would consequently embrace all those improvements which were peculiar to that truly splendid line, and which would be better appreciated as they became better known and understood. He said this with particular reference to the increased width of the gauge, which would enable them to travel with perfect safety at a rate of speed exceeding by ten miles per hour that of their opponents. In addition to this, the line, as laid down by the surveyors who had gone over the ground, was seventeen miles shorter than that *via* Chester and Holyhead. It was not to be expected that any line of railroad could be carried through so mountainous a district as North Wales without having to encounter a certain amount of difficulty in its construction; but this he was enabled to say, that the difficulties attendant upon the Worcester, Ludlow, and Port Dynllaen Line, were very materially less than had been encountered upon other lines already finished or now in course of construction. The gradients were remarkably favorable, in no case exceeding twenty feet per mile; and the tunnelling, about which so much had been said, was not of greater extent throughout the whole of the 265 miles than was to be met with upon the 115 miles of the London and Birmingham Line alone. . . . Sir William Rouse Broughton, Bart., had no doubt that the advantages which must attend the formation of the proposed railway would force themselves upon the attention of the government, and ensure its ultimate adoption, as the increased rate of speed and shorter distance would have the effect of saving sufficient time to enable letters from London to Dublin to be answered the same day. As the Chester district already possessed the advantage of railway communication, it was highly desirable that Worcestershire, Shropshire, and Montgomeryshire should participate in them. As regarded the Holyhead Line, he considered the difficulties opposed to its formation by the Menai Bridge as insurmountable. . . . Resolutions were unanimously adopted, pledging the meeting to support the adoption of the line in question. Similar meetings have since been held at Bishop's Castle, Newtown, Welchpool, and Ten-

bury, and active measures appear to be in progress for securing the co-operation of the inhabitants of Pershore, Evesham, Campden, Chipping Norton, and other towns on the eastern side of the proposed line.—*Abridged from the Worcester paper.*

THE GLOUCESTER AND BIRMINGHAM RAILWAY COMPANY appear to be using their utmost exertions to hasten operations along that portion of the line promised, in their late report, to be opened in the spring. Recently the directors and engineers inspected the works at the Cheltenham station, with the state and condition of which they expressed themselves much pleased; and, proceeding on the railroad to Tewkesbury, examined in like manner the different works in that neighborhood. The return from Tewkesbury was accomplished in sixteen minutes; we believe the distance has been gone over before in thirteen. The engines to be employed on this line, if that now at work is to be taken as "a sample for all the rest," promise to equal, if not exceed, those of any of the other railroads in the kingdom.—*Cheltenham Looker-On.*

BIRMINGHAM AND GLOUCESTER RAILWAY.—A special meeting of the Worcester Town Council was held on Saturday week last, to adopt measures for opposing the bill now before Parliament, unless a clause be introduced into it compelling the Birmingham and Gloucester Railway Company to construct a branch to Worcester. A petition has been drawn up which is to be submitted for the approval of the council, after which it is proposed to call a meeting of the inhabitants generally to confirm these proceedings.

MIDLAND COUNTIES RAILWAY.—The Midland Counties line of railway will be opened from Nottingham and Derby to Leicester in May next, and throughout to Rugby in June, in time to receive the traffic when the whole line of the North Midland is opened. This important railway is one of the few in England that will be made with the original subscribed capital. It will be in full operation without the creation of either half or quarter shares; and notwithstanding the pressure in the money market, so great has been the confidence in this undertaking, that the directors have already been enabled to borrow nearly the whole sum authorized to be taken by loan, by their act. The cost of the line, including every thing, will only be about £22,500 per mile.—*Railway Times.*

CHESTER AND CREWE RAILWAY.—The directors, we understand, inspected this line a few days ago, accompanied by the resident engineers and contractors, and were agreeably surprised and much pleased, after the long continuance of wet weather in the previous autumn and winter, with the progress of the works in the respective contracts. The aqueduct near Christleton, the excavation at Waverton, the cuttings at Beeston and Coppenhall, and the viaduct over the Weaver, near the Middlewich road to Nantwich, are so far advanced as to encourage a confident expectation of opening this railway in the ensuing autumn. We are glad also to learn that the new bill has passed the committee of the Commons, and we now apprehend there is no obstacle anticipated to the amalgamation of this line with the Grand Junction.—*Chester Gazette.*

GLOSSOP.—SHEFFIELD AND MANCHESTER RAILWAY.—We congratulate the inhabitants of this important and populous district upon the favorable prospect which they now have for the immediate extension of the Manchester and Sheffield Railway, from the terminus at Manchester to the intended station at Glossop, being a distance of ten miles. The directors have now fully determined upon the commencement of vigorous proceedings for the purpose of pushing forward the execution of the works, under the able management of Joseph Locke, Esq., the talented engineer-in-chief of the company. Two contracts at the Manchester end of the line are now advertised for immediate letting, and one contract at the Glossop end is now in the course of execution. A variety of circumstances has hitherto contributed to retard the rapid progress of the undertaking. The difficulties are now mainly

dissipated, and there is no doubt that the active support of the public will be given to carry into triumphant execution a work which affords the most substantial assurance of yielding to the public, conveniences of an invaluable character, and to the proprietors an abundant return upon the outlay of their capital.—*Derby Mercury.*

RAILWAYS.—TAX ON PASSENGERS.—Mr. Labouchere has presented a petition from the Sheffield and Rotherham Railway Company, under their common seal, in which they state that the uniform duty of one-eighth of a penny per passenger per mile, as levied under the act of parliament in that behalf, imposes an unequally heavy burden on their railway as compared with the longer lines of railway, and is especially heavy on the third and more humble class of passengers; and they pray for relief.

The Railroad from Mayence to Frankfort, is proceeding rapidly. The section from Mayence to Wiesbaden was opened on the 10th of this month, and it is expected that the remainder, as far as Frankfort, will be completed towards the end of April, if not even earlier.

The Railroad from Naples to Nocera and Castellamara, is going on in the most satisfactory manner; six miles of this railroad were opened in the month of October last, and three miles more will be opened by the end of the month of May. The shareholders have received a dividend of 8 per cent. for the months of October, November, and December; the average number of passengers during the first month was 2,000 per diem; the rainy season, of course, checked the circulation, but as the spring opens it is supposed that the traffic will be immense. Mr. Giura, a French inspector general of roads and bridges, states, in one of his reports, that no railroad he has yet seen in his extensive travels recently through Europe, appeared to him better constructed than the above, in all respects, and particularly in the talent displayed by the engineers, in avoiding curves and preserving a nearly perfect level.

The Railroad from Paris to Orleans is progressing: two wagons were the other day started on it from Paris to Choisy le Roi. The opening of this section attracted a great number of spectators.

ALLEGED INFRINGEMENT OF A PATENT.

VICE-CHANCELLOR'S COURT, SATURDAY, MARCH 21,
ELKINGTON v. PHIPSON.

This was a motion for an injunction to restrain the defendant from using a certain invention for the purposes of gilding metals of various kinds, which the plaintiff alleged to be an infringement of several patents he had obtained for a new method of coating metals with gold, platina, and silver. The plaintiff described his invention to consist in the application of a solution of gold, combined with any convenient salts, preferring those of potassium, or sodium, or ammonia, excepting carbonate of potash or soda, and giving the preference to chlorides of potassium and sodium, with the borates and muriate of ammonia, for the purpose of gilding metals. The plaintiff had perfected his invention with three different patents; and after it had been some time in use, the defendant commenced employing a solution for the very same purposes, which he alleged to be composed of different substances. The defendant's process was said to have been discovered by Mr. Woolrich, a chemist at Birmingham, who applied for a patent subsequently to the plaintiff having obtained his. The plaintiff entered a *caveat* against the application, and on a separate hearing before the Solicitor-General (Sir R. Rolfe) a patent was refused. The grounds of the refusal were very indistinctly stated. The defendant soon after met the plaintiff in Birmingham, and declared that he was convinced his invention was no invasion of the plaintiff's patent, notwithstanding the refusal of the Solicitor-General to grant the application, and that he should

continue to use it. The only novelty in the case was, that the defendant had refused to disclose in what his invention consisted, any further than negatively stating, in a detailed manner, that some of the chief ingredients and the peculiar mode of employing them by the plaintiff were no part of his process. The main allegation in support of the plaintiff's case was, that chemical salts in some form or other was an indispensable ingredient in the composition, that he had sufficiently laid claim to every kind of salts, in whatever manner they might be obtained, by first stating the particular salts he made use of, and then that any other would be equally convenient, and that it was not possible he could set forth in his specification every known substance from which they might be obtained, as there were already above 5,000. Salts in some form, it was contended, the defendant's process must contain. The defendant attacked the plaintiff's patent as uncandid and not sufficiently definite. Refusing to reveal his own secret, he insisted it was altogether different from the plaintiff's, and new, and that the open manner in which he had used it for eighteen months, with notice to the plaintiff, during which time three assizes had afforded opportunities of establishing the legal validity of the patent, was a sufficient ground for the court not now interfering by injunction.

Mr. K. Bruce, Mr. Jacob, and Mr. Wright appeared in support of the motion; and Mr. Wigram and Mr. Bacon for the defendants.

The VICE-CHANCELLOR said, before granting an injunction in such a case as the present, the Court must be satisfied there was a reasonable color of right in the plaintiff to what he claimed by his bill. The plaintiff alleged that the defendant was infringing that thing, the exclusive right to which was admitted to be secured to the plaintiff by patent. This the defendant expressly denied. Then it appeared that an application was made to the Solicitor-General by the defendant, for a patent for his invention. What took place before him was not clearly represented on the affidavits. The express words the Solicitor-General used were not stated, though one affidavit described that he "intimated" so and so. His Honor could not help admitting, that what appeared on the affidavits tended to throw suspicion on the accuracy of that part of the defendant's statement which represented that he was doing a different thing from that to which the plaintiff claimed the exclusive right. It appeared from the affidavits, there had been some difference on the subject between the plaintiff and defendant, and some way of settling the matter by arbitration was proposed, but all the while the plaintiff well knew the defendant was insisting on the benefit of his discovery, and yet the plaintiff never took any step to restrain the parties engaged from doing what they asserted they had a right to do. Therefore his Honor could not but think, though the plaintiff might have gone on for some time exercising his invention, that there had been any thing like an admission by the defendant that the plaintiff either had the legal right to do what he was doing, secured by the patent, or that the defendant had not a right to do what he was doing. If there had been no infringement, there was no ground for interfering; but supposing it was proved that there had been an infringement, it then became a question whether, attending to the peculiar circumstances of the case, the Court ought now to interfere, seeing a question was raised on the validity of the specification. Now, it appeared that one essential ingredient in the patent was some kind of chemical salt, and there were more than 5,000 different salts; and if it became a question what was a convenient salt, the labor and expense of a trial at law was thrown on those who were to prove what was a convenient salt. It might happen that the patent was good: but his Honor thought it was not his province, when an application was made for an injunction, to determine whether the patent was good or not. He thought, under all the circumstances of the case, he was not at liberty to say that an injunction should be granted, but that all the Court could do was to direct the plaintiff to bring such action as he should be advised, to try the validity of

his patent, reserving the consideration of what should be done with the motion until the right had been determined at law.

LES GUEPES; PAR ALPHONSE KARR.

Literature, like every thing else that ministers to the public weal or the gratification of the public taste, has of late years proved extraordinarily prolific. The eternal theme of modern conversation—new works—is heard in the street, the lobby of the theatre, the office, and the drawing-room. The usual interrogation, "Have you seen the last new work?" uttered in any mixed society of which you may chance to be a member, not only, you will find, immediately attracts the attention of a host of literary *gourmands*, but even arouses from their cogitations the speculator and the engineer, for they also have their *new works*, no less palatable to them in their thirst for gain or glory, than are the hydra-headed offspring of the press to the insatiable appetites of their voracious neighbors.

The English magazines first set the example of an agreeable and wholesome species of periodical publication; an example that was not long in being followed by the rest of the civilised nations of Europe; while the works of Sir Walter Scott established a new era in the class of novel writers. The drama, fallen below zero in the scale of literature, is reviving under the pens of Sheridan Knowles, of Talfourd, and of Bulwer; and not to mention an infinite variety of productions engendered by the English press—the forms of which it would be difficult to class—some of the finest portraiture of character, some of the keenest satires of men and manners, have been brought forth before the British public, of which any great literary nation might proudly boast.

G■The French follow us,—yes, follow us, as we once followed them; they have followed us in our periodical literature, they have followed us in our novel writing, they have followed us even in the lighter series of subjects, in which they once took the lead; but in this they are by no means to be considered as servile imitators. In the drama, at least in comedy and vaudeville, they still leave us far behind; and their reviews and magazines, though really founded upon ours, bear on them a stamp of originality that surprises us, and tempts with excellence that awakens in us feelings of admiration and respect. We are bound, too, to do the French the justice to say, that in one branch of periodical literature, namely, the morning prints, they surpass us altogether; what have we to compare with their morning journals, such as the *Debats*, the *Siecle*, the *National*, and several of the earliest papers; not to name many others of every shade of politics? What have we to compare with these, except in respect to the mass of matter in print? In depth of research, in logic, in purity of style and elegance of language, they eclipse our English papers most completely; while in a certain style of light literature, they have a Paul de Kock that out-rivals Boz, and an Alphonse Karr that marches like a spirit,—shadowless.

It is the work cited at the head of this article, which has given rise to the preceding observations. Its author has been for some years before the public. His novels, of an extraordinary originality, are likewise of a superior order of merit, but he shines most brilliantly as an epigrammatical and satirical writer. Having been long personally acquainted with him, we shall in some one or other of our subsequent numbers give a sketch of his biography, which we promise our readers will excite in them no ordinary interest. His *Guêpes*, the title of the work before us, is a series of the most stinging satires ever lashed against a government or a public; like wasps, their title in French, they sit quietly by all who are modest, industrious, and orderly, and dart their little piquant weapon only into those whom the political world designates as *parvenus*; the social world as pretentious folks or bores, and the literary world as charlatans. They sting the masses from time

to time, just to teach them that the quiet occupations of their fore-fathers—a healthful toil and an agreeable relaxation, divided between robust, merry, and innocent pastimes, and the sweets of home—conduced to more real happiness than their present and anxious search for gratification in the rugged paths of politics, which, when once entered, prove to be a labyrinth from which there is no escape, and by which they are cut off from all that once solaced them—all that can be productive of joyous satisfaction or of moral good. In his short, well directed satires against democracy, they will be startled from their dream to a sense of the miseries that surround them, and guard themselves from an otherwise inevitable future, pregnant with anarchy and sorrows insupportable. We shall extract for this, and for several succeeding numbers of our journal, a certain portion of the waspish satires of this distinguished writer. If the reader will only take the trouble to substitute for the person, places, and circumstances herein mentioned, persons, places, and circumstances in England, he will find the majority of these satirical extracts no less capable of *striking home* to ourselves, than to our Gallic neighbors.

AN EPIDEMIC.

There is an epidemic in France a thousand times more horrible than the plague, leprosy, and cholera put together. Every one is affected by it; and it is the bane of all but lawyers, for by it lawyers live. I mean the mania of talking. The sting of the *tarentula* sets us dancing. A certain French novelist has recently discovered an insect which he names the *cocaratcha*, and which he looks upon as the *cacoëthes loquendi*; in other words, the exciting cause of babbling. The *cocaratchas* have lately spread over France as the locusts once did over Egypt.

How absurd would be the jokes now, once humored, founded on the disposition of women to gossip, or, as it was formerly said, to cackle. In this the men have thrown the fair sex entirely into the shade. Where is now the witty agreeable intercourse of the olden time? Nothing will satisfy us at present but uttering long-winded and tedious discourses; for this reason, therefore, all are speakers—none listeners. Even this would be tolerable were people to remain quietly in their seats; but unfortunately they must mount upon chairs, tables, or sideboards, and endeavor to overwhelm their neighbors by a sort of stupendous cataract of oratory. And worse still, they must all speak together. There is no subject that is not resorted to as an excuse for talking, even the most austere virtues furnish a sufficient pretext.

There are men who become members of learned societies, solely for the opportunity of talking. So also do others become philanthropists, for talking,—philosophers, for talking,—polemists, for talking,—nay, even preachers of new doctrines, for the sake of talking.

Charity, horticulture, geography, every thing in short, is made to furnish opportunities for talking.

Is the state menaced with danger? the great, the little, all unite to support her in her hour of adversity, by toasting her at a patriotic dinner!—alas! that the toasts should be merely the excuse for talking.

At Argentan, in Normandy, a great municipal council was the other day assembled,—and for what? To consider, reader, whether the town should go to the expense of putting new soles to the boots of the adjutant of the National Guard. The discussion lasted four hours!" *

I certainly pretend to say that, were a new parliament to be formed, whether for carrying out the so much vaunted plans of reform of the present administration, or to try the effect of universal suffrage, we should find it composed of precisely the same elements and in the same proportions.

Suppose each end of the Pont Neuf blocked up, and a parliament formed of the persons enclosed thereon; be assured, the ambitious and the timid, men of sound sense and blockheads, would prevail as much in this parliament as in the actual chamber of deputies, and in the same relative degree.

You will find men who speak as badly as A, B, C, and D, and men who dress as badly as E, F, G, and H. And in a parliament thus formed, let a question, no matter on what subject, be put to the vote, count the ayes and the noes, and I will venture to stake my Turkish chibouka, with its jessamine tube, and amber mouth-piece, that you shall have a number of voters on either side, in exactly the same proportion as they would be in the present Chamber, were a similar question submitted to them.

Some one was accusing me the other day of being too severe upon certain members for the negligence of their dress, and added, that as the deputies were elected by the nation, they should not attempt to distinguish themselves from it by their costume. But what, said I, is really the national costume? Let us go to the window and see the nation pass. By the nation you, of course, mean the French.

1st Frenchman.—An organ grinder;—a dirty brown waistcoat, greasy slouched hat,—no gloves.

2d Frenchman.—A water carrier; blue jacket, and a red nightcap.

3d Frenchman.—An undertaker; black coat, trowsers ditto, a white neckcloth.

4th Frenchman.—A servant maid, probably a cook, returning home from market; a red cotton handkerchief about her head, a puce-colored merino shawl, a hand basket."

There are three powers which render impossible, in France, the realisation of the three constitutional powers; that is to say, an hereditary royalty, an aristocratic Chamber, and the Chamber of Deputies. These three powers, inherent, I fear, in the national character, are inconstancy, vanity, and ignorance. Make then, if you can, an hereditary royalty out of the inconstancy, which has given France thirteen governments in thirty-eight years. —Louis the 18th.—The Convention.—The Directory.—The re-elective Consulate.—The Consulate for Life.—The Empire.—The Provisional Government.—Louis the 18th.—Napoleon.—Louis the 18th.—Charles the 10th.—The Duke of Orleans, Lieutenant-General.—Louis Philip, King.

If each party, and each sub-division of party, were listened to, we should have at one and the same time, the Duke of Angouleme,—the Duke of Bordeaux—The Duke of Bordeaux surrounded by republican institutions—Prince Louis Bonaparte, and five or six republics with or without president.

Endeavor, on the other hand, to make an aristocratic Chamber, without an aristocracy, without fortunes, without persons possessed of landed property; putting altogether out of the question the envy, vanity, and the supreme absurdity entitled equality.

Or make a chamber of deputies out of ignorance and twaddle.

(To be Continued.)

MR. HANCOCK'S STEAM CARRIAGE.

On Monday last, a trial of this machine was made on the North-road, from Finsbury-square, to Barnet, for the purpose of ascertaining by actual experiment, the rate of speed, the degree of safety, and other properties of this new mode of travelling on turnpike roads. The steam apparatus is placed at the back of the carriage, which in this instance was a long open vehicle, with seats placed across, its length capable of holding twenty-two persons, including the conductor and his assistant. The conductor, or steersman, sits in front, and steers the carriage by a wheel, being similar to those used on board ships, and the carriage (in sea language) answers the helm with great accuracy. The conductor has also the power of turning off, or increasing the steam, so as to lessen or increase the speed, by means of a long rod, at his command. At his left is another handle, by which he can give a signal to his attendant, when he wishes the break to be put on, which is done without stopping the vehicle. On the present occasion, the trip from Finsbury-square to Barnet (12 miles) was made in

little more than an hour, including ten minutes stoppage at the Bald-faced stag (Finchley). The return to town was completed in five minutes' less time, with similar stoppages on the road; the usual rate of going up hill was from eight to nine miles per hour; on the dead level, fourteen or fifteen miles, and down hill, as much more as the conductor considered safe, the mean or average being 14 miles per hour on the whole route. This machine is only intended for those passengers, and their luggage, who prefer travelling on the turnpike roads. There appears to be little or no danger from any accident happening to the boiler, and the motion is quite free from jolting, and there is no annoyance from smoke or ashes. It however alarms horses not accustomed to its noise, and it is requisite to be vigilant on its approach, to keep them well in hand until it has passed. There were many scientific gentlemen present on the occasion.

VARIETIES.

Preparations at Alexandria.—It is stated that 300 carriages for cannon have been ordered at the arsenal, and the fleet was required to furnish fifty men from each vessel, who were to construct a fort with two batteries on a little island between the new and old ports of Alexandria.

Canal to Unite the German Ocean with the Mediterranean.—The project of the canal of the Pyrenees, to unite the German Ocean with the Mediterranean, has been discussed in the French Chamber of Deputies, as one of the greatest importance to the inhabitants of the southern departments. The general advantages of avoiding the passage through the Straits of Gibraltar, and of facilitating the communication between France and Spain, are dwelt on by the advocates for the completion of the canal, and there seems to be a feeling that the departments adjoining the Pyrenees have been too much neglected. The convenient retreat from Spain which such a canal would afford to an army is likewise brought forward. Petitions on the subject prayed a reference to the President of the Council and the Minister of Public Works, which the Chamber has decreed.

Extraordinary Viaduct.—Workmen are now engaged in the erection of one of the most extraordinary iron viaducts connected with any railway, either finished or in the course of completion, in Great Britain. The viaduct in question will cross Fairfield-street, Manchester, on the Manchester and Birmingham line of railway. The weight of the iron consumed in this viaduct is 540 tons, and it is composed of six ribs of the span of 128 feet each. The viaduct is also very remarkable for its acute angle—such angle being 24½ deg.; the width of the street being only sixteen yards, or forty-eight feet. Messrs. Bramah, of London, are understood to be the contractors.

China.—The following details of the army and navy of China, are extracted from the work on that country, by M. Gutxiang, a missionary, who resided in it many years:—"The total number of Chinese troops, including those of the navy, but not the militia nor the Mongul auxiliaries, amounts to 765,222. China has two fleets, one for the rivers, and the other for the sea. The first comprises 1,036 ships, the second 918. The river fleet has crews to the amount of 9,500 men, and that for the sea 98,421, making an aggregate of 107,921 sailors. The army is as regular as any in the world, but is rather a skeleton than a body. The soldier does not fight from love of country, but rather as a police officer or imperial chasseur; and during the greatest portion of the year, he is at home with his family, carrying on some trade or profession. The country has no need of a large embodied army, and it is the interest of all parties to reduce the soldier to a humble artisan. Consequently, there is scarcely one-tenth of the nominal force under arms at one time, the other nine-tenths existing only on paper. We have been in places where there were thousands of soldiers on the roll, and yet not more than 200

effective men could be mustered. When any rebellion breaks out, not more than 3,000 out of 10,000 can be collected. Several of the generals are admirals also. The officers and men are equally ignorant of navigation. A great many sailors of their merchant vessels belong to the navy. Their war junks differ in nothing from those employed in trade; the largest do not exceed 300 tons in burden. The whole coast is lined with ships, and there is not a single haven or calaque, however small, which has not its post of soldiers.

Transparent Imitations of Paintings.—A new candidate for the favor of the patrons of the fine arts, has lately appeared in the form of a transparent imitation of the "Descent of the Cross," by Rubens. It is the first of a series, to be entitled "Imitations of Paintings by the old Masters," and is to consist of transparent copies of the most celebrated pictures of renowned artists. The present specimen put forth by the inventors (Messrs. Milner and Dickson), presents an exceedingly good copy of the far-famed original, at Antwerp, and the artists' design of emulating "the richness and brilliancy of stained glass," has been successfully accomplished. The garments of the figures have a very nice effect, with a depth of coloring on which the eye rests with satisfaction. Messrs. Milner and Dickson state that "These transparencies are intended to be placed in the windows of libraries, boudoirs, and staircases;" and as it is the intention of the inventors shortly to publish others, the public will now have the opportunity of giving to their windows the brilliant appearance of stained glass, at the price they have hitherto paid for a common print. The future numbers of the series will, doubtless, be more perfect in the figures themselves than the present specimen. The colors, however, are all that could be desired. The size of this transparency is 17½ inches by 15 inches.

Horace Vernet, who has been painting at Smyrna for Mehemet Ali, the great battle won by Ibrahim Pacha over the Turkish troops, has recently left that city for Constantinople, on board the steamer "Stamboul." Vernet having expressed a desire to see a vessel in action, in order to judge of some of the effects in the distance, Admiral Lalande ordered a mock sea-fight to be immediately prepared. This celebrated painter has since directed some fine experiments on the Daguerreotype to be prepared by his pupil Mr. Goupi, on board the Admiral's own flag ship.

De Keyser, before taking his departure, has painted a small picture for the exhibition and fancy fair of Beveren, (a large faubourg of Antwerp), which will be sold for the benefit of the New Hospital. It is said to be one of his happiest productions, and already hundreds flock to see it at the house of the Curé of that Commune.

Rosini is no less remarkable for his wit than for his musical compositions; and certainly as an epicure few are to be compared to him. One evening in the green room of the Opera, Rosini laid a wager of a turkey, aux truffles, with some petty Italian prince. Rosini won it, and awaited with impatience day after day, the invitation from the prince, to discuss it with all due gastronomic honors. The happy moment, however, not arriving, Rosini delicately put the prince in mind of his lost wager, when the latter, completely taken off his legs from the circumstance, probably, of his being at that moment unable to keep his engagement, mumbled something about being informed of the impossibility of obtaining truffles at that season, sufficiently exquisite for the maestro's refined taste. Mio caro, replied Rosini, don't believe it; it's those confounded turkeys who have circulated the report.

Belgium.—It is with sincere pleasure that we observe many very great improvements being carried into effect on the railroad stations of the large towns on the Belgian lines. Among these we may note a very important improvement at the station at Malines; the great number of trains constantly arriving from Brussels, Antwerp, Liege, and Ghent, and crossing on the great square to the offices,

expose the public at every instant to the risk of being run over and crushed: a very pretty garden has just been formed, in which the people may while away an agreeable half hour before the arrival of their respective trains, and incur no risk of accidents.

The fall of the cliffs, and upheaving of the bed of the sea, now reach from Whitland's Bay to Axmouth, a distance of many miles. This extraordinary phenomenon of nature forms the leading attraction of Lynie Regis, which is crowded daily with visitors, who flock from all parts to see this wonderful effect of nature's convulsions.—*Bath Gazette.*

The Austrians in Italy.—Extract of a Milan letter in the *Commerce*: "The municipal authorities of Brescia have received notice that large bodies of troops will be assembled in the autumn on the plain of Montichiari, under command of General Radetzky, who intends to execute manoeuvres formed upon the plans of the battles of Napoleon. All the corps will have muskets furnished with the percussion locks invented by M. Consolo, of Milan. This lock, compared with all hitherto produced either in England or France, is more simple, less expensive, and more certain in action. It appears to combine every advantage; and the English General, Sir Robert Wilson, having thoroughly studied and proved it, intends to recommend it for adoption to the English government. It certainly surpasses all others in being applicable to field artillery and ships' guns, and must present advantages of a superior character to have induced the Austrian government not only to adopt an improvement made by an Italian, but moreover, to decorate him with the order of the Iron Crown, and grant him a pension of 5,000 frs.

Responsibility of Diligence Proprietors.—(From the *Gazette des Tribunaux*).—M. Neven, a grazier, went in a cabriolet to the bureau of the Aigle diligence, carrying a money-bag containing 5,580 frs. Here he alighted, went away for a short time to borrow some money and have some refreshment, and returned to take his place in the diligence. He first ascertained that 3,000 frs. he had brought the evening before, were safe in the chest of the diligence, and then asked for his cloak and the money-bag. They could only show him the cloak, which was already put in the place he was to occupy. He insisted that he would not leave without his money, and the diligence went off. At first, the directress of the bureau was examined by the commissaire of police, on the deposition of M. Neven, that he had left in the bureau at the same time both bag and cloak. The directress protested she had never seen the bag, which was not registered in her books, and though she was at first arrested by order of the Chamber of Council, she was afterwards discharged by a decree of the Chamber of Association. M. Neven therefore brought a civil action against the proprietors of the diligence, and the Tribunal of Commerce, after mature deliberation, decreed that the non-registry of the bag in the book was of no consequence, as it appeared the directress was in the habit of making such omissions, and the proprietors were consequently sentenced to pay 5,570 frs. On an appeal to the Cour Royale, the proprietors contended that according to M. Neven's statement, the bag contained 5,570 frs., instead of the 5,580 frs. it at first held, which proved he had taken out 10 frs. Hence, as M. Neven did not show he had done this at the bureau, it must have been at some other place that he had left it. The court not being convinced by this reasoning, confirmed the decree of the Tribunal of Commerce, and the proprietors were held responsible.

Dutch Commercial Marine.—The following account of the Dutch commercial marine, up to the 31st of December, 1839, is given by the *Staats Courant*:—"The number of ships launched and licensed during the year was 123, and their measurement 1,939 lasts. During the year, 34 ships, measuring 1,935 lasts, have been taken out of the Dutch trade, by being lost at sea, broken up, or sold to foreigners. On the 31st of December, 1838, there were 1,439

ships, measuring 117,315 lasts, employed in Dutch commerce; these, by the 31st of December last, were increased to 1,528 bottoms, and 135,399 lasts. In the course of 1839, the entrances to the ports amounted to 6,479 vessels, carrying 940,723 tons, and the departures to 6,179 vessels, carrying 596,046 tons. Besides these, there were 466 arrivals, carrying 29,906 tons, and 2,723 departures, carrying 404,649 tons in ballast. The merchant marine of Holland has thus, it appears, been increased during the last year by 89 ships, being 42 more than the increase of 1838." The Dutch last is 2,918 French litres.

Making Land.—By the intended enclosure of Morecombe Bay and the Duddon Sands, 52,000 acres of land will be reclaimed, which will form two of the most beautiful valleys in the lake district, of 83 square miles. The sands, being composed almost entirely of calcareous matter washed from the surrounding limestone, are capable of being formed into the most fertile soil for agriculture. The land proposed to be reclaimed will form an area, half of the size of Rutlandshire, and, calculating one individual for two acres, will accommodate a population of 26,000, being about half the number of the present population of the counties of Huntingdon and Westmoreland, and 5,000 more than that of Rutland. It would be about equal in population and extent to Lonsdale North, which is a peninsula lying between the two bays of Morecombe and the Duddon, on which stand the ancient ruins of Furness Abbey, and is also a rich agricultural and manufacturing district, abounding with slate, iron, and copper mines. By the reclaimed land being added to it, Lonsdale North would form one of the most pleasant and compact counties in the kingdom.—*Lancaster Guardian.*

SCIENTIFIC MEMORANDA, AND NOTES ON ART.

Musical Barometer.—A gentleman of Burkil, near Basle, in Switzerland, invented some years ago a sort of musical barometer, which he designated the weather-harp, an instrument possessing the singular property of indicating changes in the weather by musical tones. This gentleman was in the habit of shooting at a mark from his window; and to prevent the trouble of going to the mark after every shot, he fixed to it a piece of iron wire, to enable him to draw it towards him at pleasure. He frequently remarked that this wire yielded musical tones, which were exactly the octaves of each other, and he found that any iron wire, in a direction parallel to the meridian, emitted this tone every time the weather changed. Further experiment proved that brass wire would not render any sound whatever, nor even iron wire if extended east and west. Upon the principle indicated by this phenomenon, a musical barometer was afterwards constructed by Captain Hans, of Basle, in the following manner:—Thirteen pieces of iron wire, each 320 feet long, were extended from his summer-house to the outer court, crossing a garden. They were placed two inches apart; the largest were two lines in diameter, the smallest only one, and the others about one and a half. These wires were on the side of the house, and made an angle of twenty or thirty degrees with the horizon. They were stretched and kept tight with wheel prepared for the purpose. Every time the weather changed, these wires made so much noise, that it was impossible to continue concerts in the parlor; the sound sometimes resembled that of a tea-urn when boiling, sometimes that of an harmonicon, a distant bell, or an organ. In the opinion of some celebrated chemists, this is an electro-magnetic phenomenon.

Railway Telegraph and Bell Ringer.—Mr. Nicholson, of Boston, (U.S.) received a gold medal from the Mechanics' Association of that city, for his invention of a telegraph, so arranged that being placed either upon a railroad, or near it on any height, it is

made to give a signal by the operation of the passing of the engine; and the time which elapses after the passing of the engine, is indicated by a clock-work movement of the arm of the telegraph, which gradually falls to its place of rest in a fixed period of time. The bell is suspended over a railway crossing, and is made to give notice of the approach of the train, by means of a covered wire along the track of railway, for the distance of a quarter of a mile. The bell rings until the engine passes.

THE THEATRES.

"See that the players be well used."—*Hamlet.*

"Nothing extenuate, nor set down aught in malice."—*Othello.*

HER MAJESTY'S THEATRE.—On Saturday last, a brilliant and fashionable audience assembled to witness the new ballet which attracted so much attention at the Academie Royal in Paris; we allude to *La Tarentule*, in which Fanny ELESSER appeared with her wonted success; indeed, she may be said to have surpassed herself; and were it not that TAGLIANI had asserted the station of "first of dancers" in the mimic art, Fanny ELESSER would be entitled to occupy that high station. The plot of the piece is so dissimilar to most things of the kind, that we subjoin it; premising that the piece is founded upon the proposed properties of the tarentula spider, whose bite is said to throw the patient into a fit of dancing delirium, in which the sufferer expires from exhaustion. The scene lies in Sicily:—

Luidgi, a young peasant, has risen before day-break to serenade his beloved *Lauretta*; while the merry mandolines are preparing, a band of brigands, forced from their retreat in the mountains, are seen to cross the village, carrying with them their plunder, and a lady, whom they have for some time kept a prisoner. Roused at this sight, the young men run to arms to the lady's rescue.

Lauretta appears, cheerful and happy. Her mother, the rich post-mistress of the village, has told her the night before that she was to be married the following day; and the innocent girl entertains no doubt that it can only be to her beloved *Luidgi*. Firing is heard at a distance. The brigands have been defeated, and the rescued lady shows her gratitude by presents to her liberator's intended bride. On his refusing any reward for himself, she informs him that she has power and influence; and assures him that her protection will never fail him. She retires under an escort to seek repose in a neighboring convent.

A travelling carriage now drives to the post-house door, and a bombastic individual, the important Dr. Omeoquacko alights. His presence will soon mar the joy of *Lauretta*. Seduced by the charms of the young peasant girl, the doctor, whose wife has perished in an encounter with banditti, has offered his riches to *Lauretta*'s mother, and it is for him that the marriage preparations have been made. On *Lauretta*'s return in her bridal clothes, the doctor declares his passion and intentions, which are disbelieved and laughed at. The scene, however, assumes a most serious appearance, when it is sanctioned by *Lauretta*'s mother; and the unfortunate girl withdraws, protesting that she will never be the wife of any other than *Luidgi*.

An unexpected occurrence, however, will soon alter her determination. She re-enters, frightened and trembling. *Luidgi* has been stung by a tarentula, and she describes his delirium, his frantic dance, and panting agony. No assistance is at hand but that of the doctor, who, taking advantage of *Luidgi*'s dangerous situation, refuses to exercise his medical skill unless *Lauretta* will consent to marry him. The malady is increasing, and, if not instantly attended to, *Luidgi* cannot survive. *Lauretta* consents, and is led fainting to the altar. *

Yielding to his entreaties, his attendants have brought *Luidgi* near to his *Lauretta*, and, scarcely restored to his senses, her nuptial attire at first flatters his fancy as having been assumed for their own marriage. *Lauretta*'s tears, soon reveal the

truth, and the painful story is told ; a marriage thus obtained by fraud and violence cannot be valid, it shall be annulled. But how can its dissolution be obtained ? High protection and powerful influence are necessary ; the recollection of the lady's promises occurred to him ; she told him that she had power and influence, which would never fail him in case of need. Not a moment is to be lost ; the doctor has ordered the carriage to take his newly-made wife, and two hours at least, are requisite to reach the convent where the lady has retired. *Lauretta*, nevertheless, restored by hope to her merry temper, promises that for two hours she will retain the doctor, and *Luidgi* hastily departs. To obtain the desired delay, the shrewd girl employs every stratagem—now her friends, by her directions, protract their compliments and the parting glass—now her toilet for the journey is made unusually long—now she kneels in prayer before the Madonna—then, seemingly frightened by a strange noise, she locks up the doctor in an inner room ; the old man, however, re-enters through the balcony ; she is at her wit's end, and not one-half the time is as yet elapsed, when a ludicrous idea comes to her assistance. She feigns to be stung by the tarentula, and assumes the depressed countenance, the feverish tremor, and frenzy, which she has witnessed in *Luidgi's* case, and yielding to a frantic fit of dancing, defies the efforts of the doctor to soothe her supposed madness. Alarmed at this extraordinary effect of the bite, the doctor calls the company to assist, and *Lauretta* falls apparently dead from exhaustion. Her mother accuses the doctor as the cause of her daughter's death. He is on the point of being roughly treated, when *Luidgi* returns, and, in the lady who accompanies him, the doctor recognises his wife, whose life has been spared by the brigands. Now, to complete the tortures of the doctor, *Lauretta* suddenly recovering, pretends to claim him as her husband. She very soon, however, yields her pretensions to the doctor, and offers her hand to her dear *Luidgi*. The doctor's only alternative is to return to his wife, and the postilion entering the room, reminds him that the carriage has been waiting for two hours.

At the fall of the curtain, Fanny ELSSSLER was loudly called for, and rewarded with vehement applause, which she acknowledged with curtsies, and one of her own bewitching smiles.

This *ballet* will, we have little doubt, be repeated very frequently.

COVENT GARDEN.—The great gun of the week has been the re-appearance of Mr. Charles KEMBLE (after taking a final leave of the stage) in the characters of *Don Felix*, in *The Wonder*; and *Mercutio*, in *Romeo and Juliet*. On both occasions, Her Majesty was present ; and testified the sincere pleasure she had experienced in the performance of Mr. KEMBLE. We were ourselves present on both evenings, and most cordially do we respond to the sentiments of our Most Gracious Queen. Mr. KEMBLE does not look quite so young as he did some twenty years ago, but he is active in his movements, and elegant as ever in his general deportment. He performed the character of *Don Felix* with all his wonted energy, and seemed delighted with his *Donna Violante*, (Mrs. NISBETT), who acquitted herself admirably throughout. Mrs. HUMBY and Mrs. ORGER are equally entitled to honorable mention. The one as *Inez*, and the other as *Flora*, were quite in their element. Never were two "Furies" better matched. The play was admirably got up, and for the most part well performed.

The *Mercutio* of Charles KEMBLE was ever his master-piece, and his energies on Thursday were never perhaps more happily put forth. On this occasion, Miss Emmeline MONTAGUE made her second appearance here in *Juliet*, a character for which her figure, and juvenility, eminently qualify her. She does not shadow forth all our idea of the lovely, loving maiden of SHAKESPEARE, but she gives good promise of improvement. As yet, we question whether she has felt the "tender passion." Something of this is absolutely necessary to give due weight to the performance of the character.

The *Double Gallant*, a comedy by CIBBER, has been revived here, on the most liberal scale ; but it is so *mal à propos* to the present age, that we see no reason to expect it will be popular. Intriguing husbands, and intriguing wives, with all their various schemes to escape detection, are in bad taste. We therefore regret to see Mrs. NISBETT, Mrs. Walter LACY, and other amiable ladies, obliged to officiate in such repulsive characters. The play has not been rehearsed sufficiently. FARREY and Charles MATHEWS were miserably imperfect, and thus annoyed, not a little, those who had to perform with them. The *Atall* of Charles MATHEWS, proves that he was not *at all* suited to the character. He appeared in hosts of different habiliments, but they were *not* "disguises." His voice and manner were alike throughout, though his "outward man" had been metamorphosed to suit certain purposes. In saying that the ladies acquitted themselves well, we only pay them a left-handed compliment, for the piece is unworthy their exertions. The dialogue is occasionally smart, but still it acts heavily.

The comedy was originally produced in 1707, and is founded upon three other pieces—*Love at a Venture*, *The Lady's Visiting Day*, and *The Reformed Wife*, each of which was, with a good deal of ingenuity, laid under contribution for some portion of the plot and dialogue. Hence, perhaps, its little success originally, the other plays, or parts of them, being known and remembered at the time. It was only acted four nights, and then was laid by for nearly thirty years, until a generation had passed away, and the original pieces were forgotten. It was acted again in 1739, 1744, 1750, and so on, until 1817, when it was played at Drury-lane ; and three or four years since, when it was given in a curtailed shape at the Haymarket.

HAYMARKET.—MACREADY is still the magnet here, performing his most favorite characters four times a week. A Mrs. YARNOLD appeared here on Tuesday, in the *Ransom*. Her appearance is by no means in her favor, but she seems to have been well tutored for the stage. The character of *Pauline* is far, very far beyond her powers, especially as Miss Ellen TREE has made it so peculiarly her own. It seems very strange that *debutantes* will always persist in forcing comparisons—they appear to be bent on their own downfall! On Thursday, a new piece, in three acts, called a "Comical, Farcical, Eccentricity," and rejoicing in the title of *Hobbs, Dobs, and Stubbs*, was produced here. It is a literal translation from the French—*Les Trois Epiciers*, with all the fun carefully omitted. It was so infamously bad both in its construction, its plot, and its dialogue, that we have no wish even to mention the performers by name. Symptoms of sibilation commenced at very early period of the evening, and as the piece proceeded, the storm gathered blackness, and preparations were made for its complete annihilation. Mr. WEBSTER, to stem the fury of the audience, begged the piece might be fairly heard out, and said that, if then disapproved of, he would withdraw it. It is, accordingly, dead and buried. The house has generally been well attended. Why will Mr. WEBSTER thrust the *Captain* down the public's throat? If he perseveres, his house will be a wilderness.

APPALING ACCIDENT TO MR. MEADOWS, THE COMEDIAN.—It is with sincere regret we record a most disastrous accident, and one likely to lead to serious results, that occurred on Wednesday afternoon, to Mr. Meadows, the comedian. It appears that he was calling at the Olympic Theatre upon business, when a large dog sprang upon him, and, throwing him violently on the ground, actually tore open his left cheek. On further examination it appeared that, in addition to the face of Mr. Meadows having been severely lacerated, the infuriated animal had bitten through the *under eyelid*, making his clenched teeth meet in the divided flesh. Mr. Meadows was speedily released from the dog's fangs, and immediately conveyed, in a cabriolet, to the residence of Mr. Liston, the sur-

geon, under the attentive care of which gentleman he at present remains. The greatest anxiety prevails among his professional brethren for his recovery, for he is universally respected.

BRUSSELS.—Mademoiselle MERTY, a native of Antwerp, and one of the most brilliant singers of Europe, has recently returned to her native country and gave on Saturday last, her first concert at Brussels. Her voice, a fine soprano, seems within the last twelve months to have acquired a considerable increase of power and flexibility. Her notes are sweet as those of the nightingale ; and, therefore, she is not inappropriately styled in Paris, London, and Berlin, "*La Rossignole Belge*."

We regretted to remark, that she was deprived of the assistance of the vocal corps of the Opera on this occasion. We could hardly have believed that the envy of the directors of that establishment could have led them to such a breach of gallantry, as to command on that day—always a *dies non*—a rehearsal perfectly unnecessary. However, as the public met to greet Mdlle. Merty, on her return among her friends, this little shaft of malice glanced off without doing any injury.

The enthusiasm excited by her talents, was strongly marked, and we trust she will favor us before her departure from Belgium, with another concert.

On Sunday last, a grand concert was given at the "*Loyauté*" by the pupils of the Conservatory. Thanks to the zeal and activity of M. Fetis, the director and a distinguished composer, in the drilling of these young men, we heard the very finest execution it was ever our good fortune to listen to. The overture to *Der Freischütz*, and one of Beethoven's symphonies were played with a precision, an *ensemble*, and a feeling impossible to be surpassed. It is a great pity that these concerts, by far the finest in the kingdom, are always given on a Sunday morning, by which nearly all the English are deprived of the pleasure of attending them. An English pianist, Mr. LITROLPH, played two splendid *morceaux* ; one of C. M. Weber's, and the other of his own composition. The effect of his brilliant execution upon the audience, composed of about two thousand persons, was attested by thunders of applause. His playing has created quite a *fureur* in Brussels. As Englishmen, we cannot but feel proud of this.

Madame ALBERT, of Paris, made her first appearance last week at the Grand Theatre, in *Arthur*. The house was crowded to suffocation, on the occasion of the debut. To a great theatrical talent, she unites one great requisite for a successful *comédienne*, namely, a pure, flexible, and well-cultivated voice ; her *Georgetti* was a *chef d'œuvre* of fine acting, and the last couplet which she sang with remarkable taste and feeling,—*au revoir*—was loudly encored, and secured her the enthusiastic approbation of the Brussels audience.

M. DUPREZ and Madame Treillet NATHAN, are about to favor Brussels with a visit. The Minister of the Interior has placed at their disposition, the Church of the Augustins, which, for some years past, has served for a concert room. Their first concert will be given for the benefit of the poor.

PARIS.—A few days ago, Mdlle. FALCON reappeared at the Opera, after an absence of about three years. It was with real pain that we observed a very great falling off in voice that had once so finely seconded Nourrit's in the *Jewess*, the *Huguenots*, and *Robert the Devil*. She appears almost to have lost her medium notes. She fainted thrice during the performance. May it not have been owing to the intensity of her feelings at returning to her old Parisian auditors, and to the almost delirious enthusiasm with which she was welcomed, that her voice became so singularly defective? We prefer believing this, to supposing her to be afflicted with so signal a misfortune.

There is nothing whatever new in the theatrical world at Paris, if we except the re-appearance of, and a five-act play, by Bulzac, which we shall report on next week.

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THE
INVENTORS'
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A WEEKLY BRITISH AND

ADVOCATE,

OF INDUSTRY;

FOREIGN MISCELLANY OF

INVENTIONS, TRADE, MANUFACTURES, LITERATURE, AND THE ARTS.

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HISTORY OF MONEY LENDING.

(Continued from our last.)

The decline of commerce, and the urgent necessity of applying to Jews; the envy and hatred constantly exhibited toward these, and the peculiar spirit of the laws then in vigor, were among the numerous causes of those alternatives of tolerance and persecution which characterised and darkened this deplorable period of history.

In England, King John found himself forced by necessity, in 1199, to accord to the Jews letters patent, authorising them to lend on pledges, at the rate of * "four deniers interest, per week, for every livre of twenty sols, which just makes eighty per cent. per annum;" while in 1210 he imprisoned and put to the torture all those who had the good or bad fortune to possess 66,000 marks of silver. There were few of this persecuted race who had not, at least, one eye put out, and a Jew from whom they had drawn seven teeth gave 10,000 marks to save the eighth.†

In France, St. Louis drove them ignominiously out of his territories; in 1275 Philip le Hardi, his successor, was compelled to recall them, in order, says Malo, "to revive commerce, restore the circulation of money, and remedy the exhausted state of the treasury." Philip the Fair drove them out a second time; while in 1314 Louis the Tenth recalled them for the sole purpose of wringing from them enormous tributes. In Spain, although persecuted throughout the kingdom, they were well received at court, where they were preferred for the responsible duties of managing the royal treasure; here, too, they not infrequently terminated their career by being despoiled of all they had honorably and conscientiously acquired for themselves. It may be easily conceived how much these wily and fraudulent protections, these miserable vexations, and abominable spoliations, as well also as the absolute uncertainty of repayment, must have tended to raise the value of interest; the very means thus put in force to repress usury were eternally operating to render it more onerous. "Money lenders," says Macpherson (History of Commerce), "were obliged to augment the rate of interest far beyond what custom and their better feelings at other times had led them to establish, solely as a compensation for the opprobrium and destitution to which they were incessantly exposed. Under Henry the Second, the English debtor paid 10 per cent. per month. In Italy, the rate of interest was gradually

raised to 20 per cent. In France, in 1536, interest was calculated upon the fairs at Lyons, four and a quarter per cent. per fair; now, as there were four fairs a year in this city, the interest amounted to 17 per cent. per annum.* Every means possible were put into effect to elude this ridiculous and arbitrary law; among others, a man desirous of raising money, purchased goods on credit, at the very highest price, and immediately sold them back to the same individual at the very lowest, who paid him at once in cash.† Agreements of this kind bore in France the titles or terms of *Antichrèse*, *Changesec*, or *Mohatra*.‡ The popes at length sanctioned the lending of money at interest, on pledges, under the amiable title of *Mont-de-Piété*. These and many others of a like nature were the means resorted to to obtain money, but by their crookedness and the feelings of mistrust to which they constantly gave rise, they became ruinous to the borrower, and frequently ended in the discomfiture of the lender.

This state of things continued for a long period, but at length the rigor of these prohibitive measures gradually relaxed. After the definitive expulsion of the Jews under Charles the Sixth, the French were obliged to lend and borrow; something must be conceded; and therefore, to quiet consciences, lending at interest was permitted under the form or constitution of *rentes à perpetuité*, which of course entailed the alienation of property, and consequently rendered it equivalent in the majority of instances to absolute sale. So far from this measure benefiting the community, complaints against usury became more general than ever. It seemed totally impossible for sovereigns to profit by the experience of the past. Limits were imposed to this method, which in their turn produced effects diametrically opposite to those intended; so true it is, as Hallam observes,§ that every law which fetters the traffic in money, only renders the conditions of a loan more rigorous and insupportable. We are informed by Storch,|| that in 1786, the Empress Catherine reduced the rate of interest from 6 to 5 per cent., and consequently the borrower was shortly obliged to pay 7 per cent. for advances which he formerly obtained at 6.

Section 4. The Protestants, in 1546, were the first to throw off this impolitic yoke; commerce revived, and all their affairs of business took a new and prosperous turn; riches flowed in among them with surprising rapidity, specie circulated freely,

and the credit they thus succeeded in establishing became the ailment of their future operations.

The innovation, however, was still incomplete; they persisted in fixing certain rates of interest, beyond which no one was permitted to go. The only exception to this was found in Holland, where the law ceased to take cognisance of interest, and this country soon therefore eclipsed the rest, not only in the wonderful increase of its commercial prosperity, but even in the low rate of interest itself.* In Holland, men in business never paid more than 12 per cent., while the rest of the community, upon good security, paid but eight.

Elizabeth was the first to establish in England the legal right of lending money at interest, and in the fifteenth year of her reign fixed the rate at 10 per cent.; James the First reduced it to eight; Charles the Second to six; and Anne, as the Genevese had done, to five. These various statutes followed the march of national prosperity; interest diminished in proportion as disposable capital equalled the demand.

From the 17th century forwards, the most respectable merchants in France, the best magistrates and the cleverest statesmen, all appealed against the restrictions put upon the lending of money at interest, and their remonstrances succeeded in awakening government to a just sense of the dangers attendant upon this antiquated but fatal error. If they got but half-way in this necessary reform, they at all events prepared the public mind for those more important innovations which followed at the outbreak of the revolution. The national assembly, which held its first sitting in August 1789, and which witnessed the fall of so many of the feudal edifices of France, succeeded in sapping the entire foundation of legislation and matters of money lending. A decree of the 3d of Oct. of the same year gave permission to any individual to lend money at a fixed term for repayment, with stipulation as to interest, according to a rate to be established by law, without innovating in any way the common usages of business. This is the principle which now holds good throughout the civilised world in general.

THE FAIR OF NISCHNEI NOVOGOROD.

In 1817, in consequence of the fire, all the buildings, shops, and booths of the fair of Makarief, the seat of this fair, was transported to Novogorod, a town situated at the confluence of the Olga with the Wolga, which traverse the most considerable por-

* Malo's History of the Jews, page 245.
† Id. page 247. Montesquieu, liv. xxi. ch. 18.
‡ Storch Pol. Econ. vol. II. p. 262.

* Storch, Id. p. 267.

tion of Russia in Europe. The buildings and necessary locations for the new fair were constructed under the direction of General Bethancourt, in the space of five years, and cost 11 millions of roubles. Until these works were completed, the fair was held in low wooden barracks. The constructions being completed in 1822, all the usual articles of merchandise were lodged therein, with the exception only of such as by their quantity or bulk required more space than could be then afforded them. The principal commodities which were provisionally placed in barns or other out-houses, were liquors, furniture, iron, and groceries.

For three centuries, this market has been constantly on the increase, following the general development of Russia, which, by its politics and relations with Europe and Asia, rendered it the principal emporium of the empire, and has raised it at last to the highest point of commercial importance.

In the month of June, may be seen arriving in all directions from the interior, files of boats and wagons, for the opening of this active fair, which takes place with much solemnity on the 15th of July. During the first few days, nothing is purchased but the Gulzelsk pottery, which is sold before any other articles, to accommodate the proprietors of hotels, taverns, and lodging-houses. The principal business of the market begins on the 3d of August; until which period there is no regulation of the price of exchange. After that day, the most important purchases are made, and a considerable traffic is carried on in the exchange of monies.

The quick or sluggish sale of tea from the caravans, considerably influences the affairs of the market. If the sale is good, money becomes more abundant, and more extensive purchases are made at a more favorable rate of profit. If the tea trade, on the other hand, does not succeed, every species of merchandise diminishes in value. A damp is thrown upon the market, and an inevitable penury in specie, adds to the general discomfiture.

On the 25th of August a *Te Deum* is chaunted in all the churches, as a thanksgiving for the success of the commercial operations of the fair; nevertheless, business goes on until the 1st of September, and sometimes even longer still, according as the liquidations between the sellers and buyers are more or less prompt. The principal wine merchants invariably remain until the 8th or 10th of September, because that commodity is never treated for till the end of the other sales.

This fair is not only frequented by the Europeans who reside upon the confines of Russia, but also by the Asiatics whose territories join the Russian empire.

The Persians bring printed and unprinted silks, also considerable quantities of raw silks, bumbasius, galls, mattsins, and millet. The inhabitants of Bukharia, woollen capotes, shawls, raw and wove cottons, goat's hair, camel hair, and nankeens; while the Chinese, who never quit their territory, exchange at Kiatcha, their most exquisite teas, against the merchandise of Siberia, by which means these teas are sold at the fair of Novgorod. The trade of Kiatcha is of the first consequence; it is the pivot upon which the commerce and industry of Russia may be said to turn; its importance may be judged of by the immense quantities of tea brought to the fair from Siberia by the Wolga.

This tea belongs principally to the Russo-American Company, and to the first-class Russian merchants. The money which changes hands at the fair of Novgorod is generally estimated at about 140,000,000 roubles, arising, 1st, from the trade in Russian produce; 2d, from foreign manufactures and colonial produce; 3d, from articles imported from Asia.

ASSAM TEA,—ITS MANUFACTURE.

All leaves up to the size of the *Souchong*, are taken for the green tea. About three pounds of the fresh leaves, immediately they are brought in, are

cast into a hot pan, (sometimes they are kept overnight, when abundance have been brought in, and we have not been able to work all up;) they are then rolled and tossed about in the pan, until they become too hot for the hand. Two slips of bamboo, each about a foot long, split at one end, so as to form six prongs, are now used to tumble and toss the leaves about, by running the sticks down the sides of the pan, and turning the leaves up first with the right hand, then with the left, and this as fast as possible, which keeps the leaves rolling about in the pan without being burnt: this lasts about three minutes, the leaves will then admit of being rolled and pressed without breaking. They are now taken from the pan and rolled in dollahs, much the same as the black tea, for about three minutes, in which process a great quantity of the juice is extracted, if they be fresh leaves; but if they have been kept overnight, very little juice can be expressed from them in the morning, on account of its having evaporated. The Chinamen say, this does not matter, as it makes no difference in the tea. The leaves are then pressed hard between both hands, and turned round and pressed again and again, until they have taken the shape of a small pyramid. They are now placed in bamboo baskets, or dollahs, with a narrow edge, and the dollahs, on bamboo framework, where they are exposed to the sun for two or three minutes; after which, these pyramids of tea are gently opened, and thinly spread on the dollahs to dry. When the tea has become a little dry, (which will be the case in five or ten minutes, if the sun be hot,) it is again rolled, and then placed in the sun as before; this is done three successive times. But, should the weather be rainy, and there is no hope of its clearing, all this drying is done over the fire, in a small drying basket, the same as with black tea. The green tea makers have as great an aversion to drying their tea over the fire, as the black tea makers. The third time is has been rolled and dried, there is very little moisture left in the tea; it is now put into a hot pan, and gently turned over and over, and opened out occasionally, until all has become well heated; it is then tossed out into a basket, and, while hot, put into a very strong bag, previously prepared for it, about four feet long, and four spans in circumference. Into this bag the tea is pressed with great force with the hands and feet; from fourteen to twenty pounds being put in at one time, and forced into as small a compass as possible. With his left hand, the man firmly closes the mouth of the bag immediately above the leaves, while, with the right hand, he pommels and beats the bag, every now and then giving it a turn; thus he beats, and turns, and works at it, tightening it by every turn with one hand, and holding on with the other, until he has squeezed the leaves into as small a compass as possible at the end of the bag. He now makes it fast by turns of the cloth where he held on, so that it may not open; and then draws the cloth of the bag over the ball of leaves, thus doubling the bag, the mouth of which is twisted and made fast. The man then stands up, holding on by a post, or some such thing, and works this ball of leaves under his feet, at the same time alternately pressing with all his weight, first with one foot and then the other, turning the ball over and over, and occasionally opening the bag to tighten it more firmly. When he has made it almost as hard as a stone, he secures the mouth well, and puts the bag away for that day. Next morning it is opened out, and the leaves gently separated and placed on dollahs, then fired and dried until they are crisp, the same as the black tea, after which they are packed in boxes, or baskets. In China, the baskets are made of double bamboo, with leaves between. The tea may then remain on the spot for two or three months, or be sent to any other place to receive the final process.

This first part of the green tea process is so simple, that the natives of this country readily pick it up in a month or two. The second process now commences by opening the boxes, or baskets, and exposing the tea on large shallow bamboo baskets, or dollahs, until it has become soft enough to roll; it is then put into cast-iron pans, set in brick fire-

places, the same as described in making the *Sychee* black tea. The pan is made very hot by a wood fire, and seven pounds of the leaves are thrown into it, and rubbed against the pan, with the right hand, until tired, and then with the left, so as not to make the process fatiguing. The pan being placed on an inclined plane, the leaves always come tumbling back towards, and near the operator, as he pushes them up from him, moving his hand backwards and forwards, and pressing the leaves with some force with the palms, keeping the ends of the fingers up to prevent their coming in contact with the hot pan. After one hour's good rubbing, the leaves are taken out and thrown into a large, coarse, bamboo sieve; from this into a finer one, and again still finer one, until three sorts of tea have been separated. The first, or largest sort, is put into the funnel of the winnowing machine, which has three divisions of small traps below, to let the tea out. A man turns the wheel with his right hand, and with the left regulates the quantity of tea that shall fall through the wooden funnel above, by a wooden slide at the bottom of it. The tea being thrown from the sieves into the funnel, the man turns the crank of the wheel, and moves the slide of the funnel gradually, so as to let the tea fall through, gently, and in small quantities. The blast from the fan blows the smaller particles of tea to the end of the machine, where it is intercepted by a circular moveable board placed there. The dust, and smaller particles, are blown against this board, and fall out at an opening at the bottom into a basket placed there to receive it. The next highest tea is blown nearly to the end of the machine, and falls down through a trough on the side into a basket; this tea is called *Young Hyson*. The next, being a little heavier, is not blown quite so far; it falls through the same trough, which has a division in the middle; this, of course, is near the centre of the machine. A basket is placed beneath to receive the tea, which is called *Hyson*. The next, which is still heavier, falls very near to the end of the fan, this is called *Gunpowder* tea; it is in small balls. The heaviest tea falls still closer to the fan, and is called *Big Gunpowder*; it is twice, or three times the size of *Gunpowder* tea, and composed of several young leaves that adhere firmly together. This sort is afterwards put into a box, and cut with a sharp iron instrument, then sifted, and put among the *Gunpowder*, which it now resembles.

The different sorts of tea are now put into shallow bamboo baskets, and men, women, and children are employed to pick out the sticks and bad leaves; this is a most tedious process, as the greatest care is taken not to leave the slightest particle of anything but good tea. But to assist and quicken this tiresome process, beautiful bamboo sieves, very little inferior to our wire ones, and of various sizes, are employed. The different teas are thrown into sieves of different sizes, from large gunpowder to dust tea; they are shaken and tossed, and thrown from one person to another, in quick succession, making the scene very animating: in this way a great portion of the stalks are got rid of. After the tea has been well sifted and picked, it is again put into the hot pans, and rubbed and rolled as before, for about one hour; it is then put into shallow bamboo baskets, and once more examined, to separate the different teas that may still remain intermixed, and again put into the hot pan. Now a mixture of sulphate of lime and indigo, very finely pulverized, and sifted through fine muelin, in the proportion of three of the former to one of the latter, is added; to a pan of tea containing about seven pounds, about half a tea-spoonful of this mixture is put, and rubbed, and rolled along with the tea in the pan for about an hour, as before described. The tea is then taken hot from the pan, and packed firmly in boxes, both hands and feet being used to press it down. The above mixture is not put to the tea to improve its flavor, but merely to give it a uniform color and appearance, as, without it, some of the tea would be light and some dark. The indigo gives it the color, and the sulphate of lime fixes it. The Chinese call the former *Young-tin*, the latter, *Acco*. Large gunpowder tea they

call *Tychen*; little gunpowder *Choocheu*; hyson, *Chingcha*; young hyson, *Uchin*; skin tea, or old leaves in small bits, *Poocha*; the fine dust, or powder tea, *Chamoot*.—BRUCE.

A LIST OF PATENTS SEALED
FROM FEBRUARY 26TH TO MARCH 27TH, 1840.

(Continued from Page 196.)

ENGLAND.

THOMAS MILNER, of Liverpool, safety-box manufacturer, for certain improvements in boxes, safes, or other depositories for the protection of papers or other materials from fire.—6 months, Feb. 26.

WILLIAM MORRETT WILLIAMS, of Bedford-place, Commercial-road, Professor of Mathematics, for an improved lock and key.—6 months, Feb. 27.

JAMES BEAUMONT NEILSON, of Glasgow, gent., for certain improved methods of coating iron, under various circumstances, to prevent oxidation or corrosion, and for other purposes.—6 months, Feb. 29.

ROWLAND MACDONALD STEPHENSON, of Upper Thames-street, civil engineer, for an improved method or methods of adjusting, shifting, and working theatrical scenery and apparatus.—6 months, Feb. 29.

RICHARD EDWARDS, of Fairfield-place, Bow, dealer in emery cloth, for improvements in preparing and combining of materials used in lighting or kindling fires.—6 months, Feb. 29.

JOHN SYLVESTER, of Great Russell-street, engineer, for improvements in the construction of doors and frames for closing the openings of fire-places, ash-pits, flues, chimneys, and certain retorts.—6 months, March 3.

JOSEPH SHORE, of Birmingham, merchant, for improvements in preserving and covering certain metals and alloys of metals.—6 months, March 3.

JAMES HORNE, of Clapham Common, Esq., for improvements in the stuffing-boxes of lift pumps.—6 months, March 3.

JOSEPH CLISILD DANIELL, of Limpley Stoke, in the county of Wilts, for an improved method of preparing shoot or west to be used in weaving of woollen cloth, and cloths made of wool and other materials.—6 months, March 3.

JOHN RANGELEY, of Camberwell, gent., for improvements in the construction of railways, and in the means of applying power to propelling carriages and machinery.—6 months, March 3.

WILLIAM CRAIG, of Glasgow, engineer, and WILLIAM DOUGLAS SHARP, of Stanley, Perthshire, engineer, for their invention of certain improvements in machinery for preparing, spinning, and doubling cotton, flax, wool, and other fibrous substances.—6 months, March 3.

JOSEPH NORTON, of High Bridge Mill, York, manufacturer of fancy cloths, and GEORGE COLLIER, of Kelmanthorpe, in the same county, mechanic, for an improvement in looms for the wearing of figured and twilled fabrics.—6 months, March 4.

JOSEPH BOWER, of Hunslet, near Leeds, soda ash manufacturer, for certain improvements in the manufacture of carbonate of soda.—6 months, Mar. 4.

CHARLES ALEXANDER PETTERIN, of Leicester-square, gent., for improvements in wind and stringed musical instruments.—6 months, being a communication, March 4.

CHARLES KOBER, late of 46, Leadenhall-street, but now of Leeds, cloth manufacturer, for improvements in fixing color in cloth.—6 months, March 7.

CAROLINE JULIA SOPHIA COX, of Addison-road, Kensington, spinster, for an improved mode of fastening and uniting the edges of the divided parts of shoes, boots, bandages, packages, and other articles of dress or utility.—2 months, March 7.

JOSEPH ATKINSON, of Round-hill, near Masham, York, farmer, for improvements in thrashing and winnowing machines.—6 months, March 7.

ROBERT MOLYNEUX, of Southampton-row, Middlesex, chronometer-maker, for an improvement or improvements in chronometers.—6 months, Mar. 7.

WILLIAM MALTBY, junior, of Mile-end, chemist, and RICHARD CUERTON, jun., of Percy-street, brass-founder, for improvements in extracting and concentrating the color, tannin, and other matter contained in vegetable and animal substances.—6 months, March 7.

LUKE HERBERT, of Birmingham, civil engineer, for improvements in the manufacture of coffered spades and shores, songhing and grafting tools, and other implements of a like nature.—6 months, being a communication, March 7.

HAYWARD, TYLER, of Milton-street, Cripplegate, engineer, for certain improvements in machinery or apparatus for impregnating liquids with gas, including bottles.—March 7.

JAMES KNOWLES, of Bolton, Lancaster, coal-merchant, for an improved arrangement of apparatus for regulating the supply of water to steam boilers.—4 months, March 10.

GEORGE GWINNE, of Portland-terrace, Regents-park, gent., for improvements in the manufacture of candles, and in operating upon oils and fats.—6 months, March 10.

WILLIAM FORRESTER, of Barrhead, Renfrew, manager, for certain improvements in sizing, starching, dressing, and otherwise preparing warps for weaving fabrics, and the machinery and apparatus therewith connected.—6 months, March 10.

THOMAS PEET, of Bread-street, Cheapside, gent., for certain improvements in steam-engines.—6 months, being a communication, March 10.

RICHARD SMITH, and RICHARD HACKING, of Bury, Lancaster, machine-makers, for certain improvements in machinery or apparatus for drawing, slubbing, roving, and spinning cotton, wool, flax, and other fibrous substances.—6 months, March 10.

ETIENNE ROBERT GAUBERT, of Paris, for certain improvements in machinery or apparatus for distributing types or other typographical characters into proper receptacles, and placing the same in order for setting up after being used in printing.—6 months, March 10.

JAMES HADDEN YOUNG, of Lille, in the kingdom of France, and ADRIAN DELOMBRE, of the same place, for an improved mode of setting up printing types.—6 months, March 13.

ROBERT VARIGAS, of Burton-crescent, surgeon, for improvements in rendering fabrics and leather waterproof.—6 months, March 16.

WILLIAM CROFTS, of Radford, Nottingham, machine-maker, for improvements in machinery for the purpose of making figured or ornamental bobbin net, or twist lace, and other ornamental fabrics, looped or woven.—6 months, March 16.

JEAN FRANCOIS VICTOR FABIEN, of King William-street, London, gent., for improvements in rotary engines to be worked by steam or other fluids.—6 months, March 16.

THOMAS CRADDOCK, of Broadheath, Radnor, farmer, for a certain improvement or improvements in steam-engines and steam-boilers.—6 months, March 16.

RICHARD SMITH and RICHARD HACKING, of Bury, Lancaster, machine-makers, for certain improvements in machinery for spinning cotton, and other fibrous substances.—6 months, March 16.

ISHAM BAGGS, of Cheltenham, gent., for improvements in engraving, which improvements are applicable to lithography.—6 months, March 17.

MOSES POOLE, of Lincoln's-inn, gent., for improvements in producing and preparing leys for soap-making, and in the manufacture of soap.—6 months, being a communication, March 17.

SAMUEL SEAWARD, of the Canal Iron Works, Poplar, engineer, for certain improvements in the construction of steam-engines, and in the application of steam-engines to propelling ships and other vessels.—6 months, March 17.

SIR WILLIAM BURNETT, of Somerset House, Middlesex, Commander of the Royal Hanoverian Guelphic Order, for improvements in preserving animal, woollen, and other fibrous substances from decay.—6 months, March 19.

JOHN JACKSON, of Manchester, nail and bolt manufacturer, for certain improvements in the manufacture of nails, nuts, bolts, and rivets.—6 months, March 19.

THOMAS STIRLING, of Limehouse, patentee of the "Rapid Filterer," for improvements in the manufacture of fuel.—6 months, March 20.

FRANCIS WILLIAM GERISH, of East-road, City-road, patent hinge maker, for improvements in locks and keys, and in other fastenings for doors, drawers, and other such purposes.—6 months, March 20.

CHARLES KEENE, of Sussex-place, Regent's-park, gent., for improvements in producing surfaces on leather and fabrics.—6 months, being a communication, March 23.

WILLIAM NEWTON, of Chancery-lane, civil engineer, for certain improvements in the strengthening and preserving of ligneous and textile substances.—6 months, being a communication, March 23.

SAMUEL HILL, of Sloane-street, Chelsea, gent., for improvements in the making of bread and biscuit.—6 months, March 23.

ELIHANAN BICKNELL, of Newington Butts, merchant, for improvements in separating the solid from the liquid parts of tallow and other fatty matters.—6 months, being a communication, March 25.

WILLIAM PALMER, of Sutton-street, Clerkenwell, candle-maker, for improvements in the manufacture of candles, and in apparatus for applying light.—6 months, March 25.

HENRY SMITH, of Birmingham, lamp manufacturer, for improvements in gas burners and in lamps.—6 months, March 25.

GEORGE RICHARDS ELKINGTON and HENRY ELKINGTON, of Birmingham, for improvements in coating, covering, or plating certain metals.—6 months, March 25.

JOSEPH CROSFIELD, of Warrington, soap-maker, for certain improvements in the manufacture of plate glass.—6 months, March 25.

SAMUEL KNIGHT, of Woodhouse Mills, Lancaster, bleacher, for certain improvements in machinery or apparatus for boiling, bucking, or scouring, for the purpose of preparing and assisting the process of bleaching and dyeing cotton, and linen, and other fabrics, and fibrous substances.—6 months, March 25.

JAMES HAY, of Belton, Scotland, Captain in the Royal Navy, for an improved plough, which he entitles the "Belton plough."—6 months, March 25.

HENRY PHILIP ROUQUETTE, of Norfolk-street, Strand, merchant, for a new pigment.—4 months, being a communication, March 25.

JAMES SABBERTON, of Great Pulteney-street, Golden-square, tailor, for a fastening to attach straps to the bottoms of trousers.—2 months, March 26.

ALEXANDER SOUTHWOOD STOCKER, of Birmingham, manufacturer, for certain improvements in manufacturing tubing or tubes, which are applicable to gas and other purposes.—6 months, March 27.

RICHARD PROSSER, of Cherry-street, Birmingham, civil engineer, for certain improvements in machinery or apparatus for manufacturing pipes.—6 months, March 27.

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK
ENDING MARCH 28, 1840.

ENGLAND.

Not a single patent has expired during this week,

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of May 9. Each party will receive, in addition, a *private* communication to the same effect.

Stephen George Dordoy, Blackman-street, Borough, chemist, due April 31.
David Greenwood, millwright, and William Pickering, merchant, both of Liverpool, May 2.
Samuel Morand, merchant, Manchester, May 2.
Theobald Wahl, George-yard, Lombard-street, engineer, May 2.
Alexander Angus Croll, Greenwich, manufacturing chemist, May 2.
John Cutten, Margate, Kent, coal-merchant, May 2.
William Hannis Taylor, of New York, and Bridge-street, Blackfriars, May 2.
Frederick Augustus Glover, Charlton, near Dover, May 2.
Henry Venner Cocks, ironfounder, Birmingham, May 2.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS
ENTERED AT THE ENROLLMENT OFFICE, UP TO THE
WEEK ENDING MARCH 28, 1840.

(Continued from our last.)

ENGLAND.

FRANCIS MACERONI, of St. James's-square, improvements in steam-boilers or generators, March 26.—This boiler or generator of steam is formed entirely of tubes, which also form the bars and exterior of the fire-place or furnace, whereby the several parts are less liable to be destroyed by heat, and the moisture passing through the heated iron tube, prevents the formation of clinkers. The vertical longitudinal and horizontal tubes are fastened to each other by means of short cylindrical stems, with a screw formed at each end; so that one end is attached to the end of the tube, while the other pierces the side of the longitudinal or horizontal tube. The tubes are so arranged that any one of them may be removed without the necessity of pulling the boiler to pieces.

HENRY NEEDHAM SCROPE SHRAPNELL, of Gosport, in the county of Hants, improvements in corkscrews, March 26.—That part of the corkscrew pressing against the bottle, is lined with soft leather, and the two rising branches support the female screw that receives the male screw, forming the stem of the corkscrew worm, which enters the cork. The handle forms two parts, united by a knuckle joint; the lower part has a female screw to work on the stem, which has nut head, and the upper part has a cavity formed, so as, when folded on the lower part, to encompass the nut head. Thus when the two parts forming the handle are folded, the stem can be turned, for the purpose of bringing the worm of the corkscrew to a convenient position over the cork in the bottle. By turning the folded handle

from right to left, the worm enters the cork, while the male screw, forming the stem, passes down the female screw that is supported by the two rising branches. The worm having entered the cork, the handle is unfolded, and forms a long leverage, which on being turned from left to right causes the part on the stem to revolve and press against the bearing, supported by the rising branches, by which means the stem is forced to rise, and draw with it the cork from the bottle.

Another improvement places, just above the worm of the corkscrew, a revolving disc, with two projecting prongs, which enter the cork as the worm descends, and until an upright lever, passing through the revolving disc, presses against the notched disc, that forms a part of the stem and handle of the corkscrew. The lower disc, with prongs, prevents, by means of its lever, the worm to enter further into the cork; but the cork is turned round in the mouth of the bottle, so as to loosen its hold, and thus requiring less force to draw it from the bottle.

SAMUEL WILKES, Darlestone, Stafford, ironfounder, improvements in boxes and pins or screws for rices and presses, March 25.—The inventor, to form his cores for casting, employs well constructed brass moulds. The mould for forming the core of the female screw divides longitudinally in three parts; a stick is placed longitudinally down the centre of a frame, and the sand or loam, being well pressed into the parts of the female mould, is brought together round the stick, so as to form the core of a male screw. Good malleable iron is poured into the frame, and round the core, which, after the iron is cold, is removed, and leaves the impress of a female screw in its box.

The male screw is formed by placing a cylindrical tube, of less diameter than the screw, down the centre of a frame filled with sand or loam. The cylindrical tube is withdrawn, and the brass male screw mould, steadied by its bearing, is turned gently down the hole formed by the cylindrical tube, so as to leave an impression in the sand or loam. The head of the pin or screw is formed in another frame, which is united to the frame of the male screw. The malleable iron is poured into the conjoined mould, forming a female core, which gives the shape of the male screw.

The castings are afterwards annealed in the usual way, and if any superfluous parts adhere to the worms of screw or box, they must be removed in a suitable lathe.

JOSEPH CLINTON ROBERTSON, Fleet-street, an improved method of manufacturing artificial marble, March 27.—The inventor takes gypsum, alabaster, or other matter forming sulphate of lime, and has it shaped in a lathe or by chisel to the form required, it being exceedingly soft and easy to work. The form or shape is put into an oven, in order to draw from it all its moisture. The oven should be of convenient structure, as to allow an examination of the gypsum, &c., during the progress of desiccation. Great care must be taken, for the parts are exceedingly fragile. All moisture being evaporated, the form is plunged into a solution of alkaline salt. The heated gypsum absorbs the solution, which, when cold, causes it to have the appearance of white marble. Common salt is well adapted for this purpose, but to produce a colored marble, the salt or sulphate of potash, &c., should be rendered into a solution by some coloring matter, according to the taste of the artist.

HENRY JAMES PIDDING, Osneyburgh-street, Middlesex, improvements in collars for horses and other animals, March 27.—This improvement is to dispense with the ordinary harness, by means of a frame that is shaped to the neck of a horse. The frame forms a part of the collar, and has a knuckle joint at the upper end. The lower end is divided, and has an oblong ring to unite its parts. This ring is only oblong at the side that holds the pole ring; the other side is flat, and has a rack formed on the inner edge; so that by means of brass holders, attached to the opening part of the frame, the collars may be suited to the neck of any horse.

ON THE PUBLICATION OF SPECIFICATIONS.

(To the Proprietors of the "Inventors' Advocate.")

GENTLEMEN,—I hereby give you further notice, on behalf of my client Mr. Pinkus, that he holds the copyright of an Essay on motive powers, embodying the specifications of a patent granted to him as the Author, dated 26th August, 1839; entitled "Improvements in the methods of applying motive power to the impelling of machinery, which improvements are applicable to several useful purposes,"—and that the same has been duly entered at Stationers' Hall, and duly certified. And I further give you notice, not to publish, or sell the same in any manner, without the previous license and consent in writing of the said Henry Pinkus.

I am, Gentlemen,
Your obedient servant,
W. MARSHALL.

67, Newgate-street, March 27, 1840.

We received the above, late on the evening of the 27th ult., after our Journal was ready for press. As Mr. Pinkus seems anxious to court notoriety, we give him the full benefit of our columns. Both his effusions have now appeared in print. We have commented on his extraordinary conduct in another part of our Paper, and to this we would direct our readers' most particular attention; merely adding, for Mr. PINKUS's consolation, that his invention instead of being *new*, is taken from that of Mr. HAGUE, the engineer, who first gave it to the world in May, 1836!! Having ascertained this fact, we now leave Mr. HAGUE to deal with Mr. PINKUS as, in his wisdom, he may think fit. Mr. P. has placed himself in a very unenviable position.

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED FROM JULY 1ST TO DECEMBER 31ST, 1839.

(Continued from page 180.)

Anchors, July 26, Rodger, W.
Apparatus for grinding covers or stoppers for jars, bottles, &c., Dec. 11, Wisher, J.
Apparatus for throwing and winding silk, &c., Nov. 19, Roman, M.
Apparatus to produce or evolve chlorine, Oct. 19, Clark, T.
Arches and roofs of buildings, Nov. 7, Palmer, H. R.
Block-printing,—see Letter-press, A. A.
Block-printing, Oct. 28, Hulimandel, C. J.
Bobbin-net lace, July 4, Crofts, W.
Bobbin-net lace, Sept. 14, Heathcoat, J.
Boilers for generating steam, July 18, Macerone, F.
Boiler for locomotive carriages, Aug. 20, Field, J.
Boilers from bursting, Nov. 19, Douglas, J. C.
Boilers,—see Vessels, R. J. S.
Bolts and latches for doors, Dec. 20, Pierson, J. G.
Bow-sprits,—see Fids, B. F. S.
Buildings,—see Arches and roofs, P. H. R.
Carriage, Dec. 20, Quainton, L.
Castors for furniture, Oct. 5, Lewty, James W.
Chlorine,—see Apparatus, C. T.
Consuming smoke, furnaces, &c., Aug. 12, Wigston, W.
Curing certain maladies of the head, Sept. 21, Cournier, L.
Dock to facilitate the repairing of ships, July 4, Mitchell, A.
Drags for carriages, August 7, Rees, D.

Dyeing blue colors,—see Prussiate, H. H.
 Engine power, Nov. 19, Predaval, B. R., Comte de.
 Equalising draught, &c., Oct. 7, Young, W. T.
 Evaporation, Aug. 24, Kneller, W. G.
 Excavating and deepening beds of rivers, &c., Dec. 11, Affleck, T.
 Excavating, &c. machine, Nov. 2, Brunton, W.
 Fids, bowsprits, and gibbooms, Aug. 14, Blake, F. S.
 Filters for sugar and other liquids, Dec. 6, Hall, J.
 Fuel, Nov. 2, Stafford, D.
 Furnaces,—see Consuming smoke, W. W.
 Furniture,—see Liquid, W. F. W.
 Gas-making, burners, &c., Oct. 7, Hutchinson, S.
 Generating and applying heat, Nov. 19, Douglas, J. C.
 Gibbooms,—see Fids, B. F. S.
 Goods,—see Machinery, G. B.
 Head,—see Curing, C. L.
 Heating apartments, &c., by gas, Oct. 19, Barnes, R.
 Heat,—see Generating, D. J. C.
 Heat, producing,—see Steam-engines, H. R.
 Heckling flax, hemp, &c., Dec. 6, Wordsworth, J.
 Hemp, &c., prepared for the manufacture of glazing, friction, paper-maker's felts, &c., July 18, Livesey, J.
 Horological machines, Nov. 14, Pace, J.
 Iron rails, supporting, for edge railways, Dec. 11, Stephenson, R.
 Latches,—see Bolts, P. J. G.
 Leather,—see Tanning, N. J. P.
 Letter press and block-printing, July 18, Applegarth, A.
 Liquid, or composition, for polishing furniture, Sept. 21, Williams, F. W.
 Locks, Dec. 3, Parsons, T.
 Locks, Dec. 20, Hunter, E.
 Locomotive Steam-engines, Oct. 7, Stephenson, R.
 Looms of Jacquard, Oct. 19, Gerard, J. F. V.
 Looms for weaving, Oct. 5, Welch, T.
 Machine for sawing, boring, &c., wood, Dec. 20, Hamilton, J.
 Machinery for transporting goods or passengers, also steam-engines, Sept. 7, Green, B.
 Machinery used in making pins and needles, Nov. 21, Jones, W.
 Malt, drying, Sept. 7, Else, R.
 Mechanical power, Nov. 2, Wass, J.
 Mechanical power, Dec. 16, Wright, L. W.
 Mule of the spinning machine, Nov. 9, Ewart, P.
 Musical instruments, Oct. 7, Gurney, G.
 Nail-making, Oct. 19, Joyce, J.
 Needles,—see Machinery, J. W.
 Ordnance, and on the carriages, and projectiles, Oct. 19, Gillyon, T. A. G.
 Printing in colors, Nov. 23, Leggett, H. H.
 Paper-making, Dec. 22, Dickinson, G.
 Passengers,—see Machinery, G. B.
 Pencils, pointing, &c., Oct. 7, Eckstein, G. F.
 Pens and penholders, Nov. 19, Gauci, P. J.
 Pianofortes, &c., Nov. 1, Zeitter, J. F.
 Pins,—see Machinery, J. W.
 Printing presses, July 25, Kitchen, J.
 Projectiles,—see Ordnance, G. F. A. G.
 Propelling vessels, Dec. 19, Sunderland, T.
 Prussiate of potash, and soda, also in dyeing blue colors without indigo, Oct. 19, Hendriks, H.
 Quadrants,—see Sextants, R. D.
 Rags of linen, &c., prepared for paper, Sept. 28, Davey, H.
 Rail for railways, Aug. 10, Walkinshaw, J.
 Raising or forcing fluids, Aug. 19, Read, J.
 Rotary engines, Dec. 20, Dundonald, Earl of.
 Roving, drawing, &c. hemp, wool, &c., Aug. 20, Lawson, S.
 Roving-frames for cotton, &c., Sept. 21, Howard, J. S.
 Roving-frame for cotton, &c., July 11, Newton, W.
 Sewing, &c.,—see Machine, H. J.
 Sextants, quadrants, &c., Dec. 20, Rowland, D.
 Silver separated from lead, Oct. 28, Pattinson, H. L.
 Soda, purifying, Oct. 19, Attwood, C.
 Solvent not hitherto used, Aug. 20, Barnard, W. H.
 Spinning and roving machine, Sept. 21, Robertson, J.
 Spinning wool, cotton, &c., Nov. 1, Travis, J.
 Springs for doors, Oct. 5, Smith, Andrew.

Steam-boilers, Oct. 7, Maudslay, J.
 Steam-boilers, Oct. 28, Muntz, G. F.
 Steam-carriages, Oct. 28, Redmund, D.
 Steam-engine power, Dec. 21, Kyan, J. H.
 Steam-engines, July 25, Petrie, J.
 Steam-engines, and producing heat, Nov. 5, Holme, R.
 Steam-engines,—see Machinery, G. B.
 Steam and other power to ships, &c., Nov. 19, Brandling, R. W.
 Stoppers,—see Apparatus, W. J.
 Stoves supplied with heated air, without bellows or blow-pipe, Dec. 7, Wolff, E.
 Sulphate of quinine, July 25, Despres, J. A.
 Tanning, or leather, from hides, &c., Dec. 21, Newmann, J. P.
 Throwing and winding silk,—see Apparatus, R. M.
 Valves for steam, gas, &c., Sept. 14, Dodds, J.
 Vegetable juices and liquid deprived of their acid qualities, also coloring matter and oil, Nov. 21, Douglas, J. C.
 Vessels for sustaining the pressure of fluids, also steam-boilers, Aug. 14, Russell, J. S.
 Weighing machine, Oct. 5, Berry, M.
 White lead, or carbonate of lead, Dec. 11, Wood, H. W.
 Wood,—see Machine, H. J.
 Wool-combing, &c., Aug. 13, Bates, J.
 Woollen and other cloths, cutting, cropping, &c., Dec. 11, Carr, R.
 Woollen or other cloth, requiring the process of fulling, felting, cleansing, &c., Aug. 13, Dyer, J.

Else, Richard, Malt, drying, Sept. 7.
 Ewart, Peter, Mule of the spinning-machine, Nov. 9.
 Field, Joshua, Boiler for locomotive carriages, Aug. 20.
 Forassa, John B. C.,—see Muston, Paul J.
 Gauci, Paul J., Pens and penholders, Nov. 19.
 Gerard, Jacque F., Looms of Jacquard, Oct. 19.
 Gillyon, Thomas A. G., Ordnance, and on the carriages and projectiles, Oct. 19.
 Green, Bordesley, machinery for transporting goods or passengers, also steam-engines, Sept. 7.
 Gurney, Goldsworth, Musical instruments, Oct. 7.
 Hall, John, Filters for sugar and other liquids, Dec. 6.
 Hamilton, James, machine for sawing, boreing, &c., wood, Dec. 20.
 Heathcoat, John, Bobbin-net lace, Sept. 14.
 Hendriks, Herman, Prussiate of potash, and soda, also in dyeing blue colors without indigo, Oct. 19.
 Holme, Richard, Steam-engines, and producing heat, Nov. 5.
 Howard, John S., Roving frames for cotton, &c., Sept. 21.
 Hullmandel, Charles J., Block-printing, Oct. 28.
 Hunter, Ebenezer, Locks, Dec. 20.
 Hutchinson, Stephen, Gas-making, burners, &c., Oct. 7.
 Jones, William, Machinery used in making pins and needles, Nov. 21.
 Joyce, John, Nail-making, Oct. 19.
 Kitchen, John, Printing presses, July 25.
 Kneller, William G., Evaporation, Aug. 24.
 Kyan, John H., Steam-engine power, Dec. 21.
 Lawson, Samuel, Roving, drawing, &c. hemp, wool, &c., Aug. 20.
 Ledsam, Daniel,—see Jones, William.
 Leggett, Henry H., Printing in colors, Nov. 23.
 Lewty, James W., Castors for furniture, Oct. 5.
 Livesey, John, Hemp, &c. prepared for the manufacture of glazing, friction, paper-maker's felts, &c., July 18.
 Macerone, Francis, Boilers for generating steam, July 18.
 Massey, Edward,—see Gauci, Paul J.
 Maudslay, Joseph, Steam-boilers, Oct. 7.
 Mitchell, Alexander, Dock to facilitate the repairing of ships, July 4.
 Muntz, George F., Steam-boilers, Oct. 28.
 Muston, Paul J.,—see Wood, Henry W.
 Newman, John P., Tanning or leather from hides, &c., Dec. 21.
 Newton, William, Roving-frame for cotton, &c., July 11.
 Pace, John, Horological machines, Nov. 14.
 Palmer, Henry R., Arches and roofs of buildings, Nov. 7.
 Parsons, Thomas, Locks, Dec. 3.
 Pattinson, Hugh L., Silver separated from lead, Oct. 28.
 Pelletier, Joseph,—see Despres, Jean A.
 Perry, Stephen,—see Massey, Edward.
 Petrie, John, Steam-engines, July 25.
 Pierson, Josiah G., Bolts and latches for doors, Dec. 20.
 Predaval, Barthelemy R., Comte de, Engine power, Nov. 19.
 Quaintin, Louis, Carriages, Dec. 20.
 Read, John, Raising or forcing of fluids, Aug. 19.
 Redmund, David, Steam-carriages, Oct. 28.
 Rees, David, Drags for carriages, Aug. 7.
 Robertson, John, Spinning and roving machine, Sept. 21.
 Rodger, William, Anchors, July 26.
 Roman, Marcel, Apparatus for throwing and winding silk, &c., Nov. 19.
 Rowland, David, Sextants, quadrants, &c., Dec. 20.
 Russell, John S., Vessels for sustaining the pressure of fluids; also steam-boilers, Aug. 14.
 Smith, Andrew, Springs for doors, Oct. 5.
 Smith, Robert,—see Walkinshaw, John.
 Squire, John,—see Macerone, Francis.
 Stafford, Dominic, Fuel, Nov. 2.
 Stephenson, Robert, Iron rails, supporting, for edge railways, Dec. 11.
 Stephenson, Robert, Locomotive steam-engines, Oct. 7.

- Sunderland, Thomas, Propelling vessels, Dec. 19.
 Tennant, John,—see Clark, Thomas.
 Travis, John, Spinning wool, cotton, &c., Nov. 1.
 Walkinshaw, John, Rail for railways, Aug. 10.
 Wase, Joseph, Mechanical power, Nov. 2.
 Welch, Thomas, Looms for weaving, Oct. 5.
 Westley, William K.—see Lawson, Samuel.
 Wigston, William, Consuming smoke, furnaces, &c., Aug. 12.
 Williams, Fitz Walter, Liquid or composition for polishing furniture, Sept. 21.
 Wisher, John, Apparatus for grinding covers or stoppers for jars, bottles, &c., Dec. 11.
 Wolff, Ernst, Stoves supplied with heated air, without bellows or blow-pipe, Dec. 7.
 Wood, Henry W., White lead or carbonate of lead, Dec. 11.
 Wordsworth, Joshua, Heckling flax, hemp, &c., Dec. 6.
 Wright, Lemuel W., Mechanical power, Dec. 16.
 Young, William T., Equalising draught, &c., Oct. 7.
 Zeitter, Jacob F., Piano-fortes, &c., Nov. 1.

FOREIGN PATENTS.—BELGIUM.

LIST OF PATENTS RECENTLY GRANTED BY THE BELGIAN GOVERNMENT.

(Continued from No. 33.)

Schmitz, J. W., represented at Brussels by Nolle, rue du Musée, No. 6, a patent of invention for 10 years, for a general economical system of fuel, applicable to stoves, furnaces, steam-engines, &c. &c., March 14, 1840.

Dandrimont, J. and Co., of Liege, rue St. Véronique, No. 707, a patent of invention for 15 years, for a method of rendering paper waterproof by means of a mineral substance, March 14, 1840.

Schmitz, J. W., represented at Brussels by Nolle, rue du Musée, No. 6, a patent of invention for 10 years, for a new system of steam-engine, and machinery attached to the same, March 14, 1840.

Asseman, Jules, of Brussels, rue de Notre Seigneur, No. 15, a patent of improvement for 10 years, to date from July 17, 1839, for improvements in carriages called "affiches roulantes," for which he obtained a patent July 17, 1839, March 14, 1840.

Prisse, Florent, and Co., Ixelles, rue du Berger, No. 79, a patent of addition for 10 years, to date from Oct. 2, 1839, for improvements in the new processes of soldering metals by the action of flame (dards de flamme), for which they obtained a patent Oct. 2, 1839, March 14, 1840.

Van Meerbeek, H. C., of Brussels, rue des Bouchers, No. 41, a patent of invention for 10 years, for a method of disinfecting animal excrements and of converting these matters into manure, March 18, 1840.

Franks, Robert, of London, represented at Brussels by Delianson Clark, Marché aux Poulets, No. 1, a patent of invention for 15 years, for a process for rendering cloths and woven tissues of cotton, wool, flax, silk, and other substances waterproof, and for preserving them from damp, March 18, 1840.

Newton, William, represented by Prisse, at Ixelles, rue du Berger, No. 79, a patent of importation and improvement for 5 years, for improvements in looms, March 18, 1840.

Berry, Miles, represented by Prisse, at Ixelles, rue du Berger, No. 79, a patent of importation and improvement for 5 years, for improvements in machines or apparatus for washing or dressing the threads for warps of cotton, wool, flax, and of other substances employed in weaving, March 18, 1840.

FOREIGN CORRESPONDENCE. (FROM OUR OWN CORRESPONDENT.)

FRANCE.

A very curious circumstance at Paris has lately engaged the attention of the scientific, as well as of the lovers of the marvellous. The Academy, after condemning almost with unanimity of voices, experiments made before them upon animal magnetism, allows itself to be made the arbiter in a question raised by an enemy to magnetism. The apostles of the doctrines of Mesmer look upon the whole affair as essentially unjust, because the propounder of the experiment to be tested, if he really had the interests of science at heart, ought to have chosen men of impartiality for the decision, and not men who as a body have on every occasion evinced a decided determination to condemn, whether the experiment before them succeeded or failed. The gentleman above alluded to, a M. Burdin, proposed 3,000 francs to whoever shall be able to read or to recognise objects in obscurity. M. Pigeaire, a person distinguished for his powers in magnetism, took up the gauntlet, and introduced to the academy his daughter, whose eyes were bandaged in such a way as totally to obscure vision. The bandeau was examined by the members, and its form was modified by several, in order that there should be no possibility of fraud, and that the patient should be even deprived of the very sensation of light.

The experiments were successful, but the Academy thought fit to name a special commission, the members of which thought proper to place a casque with beaver over the bandeau, and to substitute silk velvet for the cotton velvet, of which the bandeau was originally composed. Any one who is acquainted with the identity of electrical and magnetical phenomena, will immediately perceive, that a proceeding of this kind would render abortive the whole series of experiments; a simple tissue of silk thrown over Mdle. Pigeaire would have protected her from lightning, while a quadruple bandage of silk velvet was considered by the learned commissioners as essential in eliciting the truth of the young lady's magnetic powers! M. Pigeaire of course objected to this, and his refusal to comply with the demand of the commissioners was looked upon by the Academy as equivalent to a failure, and Mons. and Madlle. Pigeaire were thrown hors de combat.

This is a summary of the observations of the Parisian press, but we cannot vouch for their being entirely free from exaggeration. Much has been written for and against mesmerism, and men of known talent of the highest moral character are believers in its truth. To steer a middle course between conflicting opinions of this nature, is more difficult than may appear at first view, but in the doubt from which we cannot at present extricate ourselves, we rather incline to espouse the opinions of those who contend that there are but an infinitely small number of persons capable of being magnetised, and that it is in these, and these only, that magnetic phenomena are likely to lead to any practical results. To suppose the faculty of seeing in utter darkness, is to suppose the existence in these extraordinary individuals of a sixth sense, and if we are ever brought to admit this as a truth, we may with equal reason presume, that there is a seventh capable of development, namely, that of *præcience*. The fact, if fact it was, of Mdle. Pigeaire reading in utter darkness a stanza from Malherbe, may be looked on as the first ray of light penetrating into the tenebrious realms of futurity. Where are the limits of intelligence when this is disengaged of matter? Were the oracles of ancient Greece, the prophecies of the good and wise of still more ancient periods of the world's history, (authenticated by the testimony of sound philosophers, and by holy writ), were these faculties developed in beings invested by nature with magnetic powers; or were they sacerdotal delusions, such as the sceptics of Voltaire's and Shaftesbury's school would have us to believe, but which modern discoveries and investigations are destined to confirm or to confute?

Ever since the father of German philosophy has introduced the study of nature and her laws, considered abstractedly from the objects to which the latter are applied, metaphysicians have endeavored to raise them to the level of the positive sciences. They have denied that time and space exist of themselves, independently of human intelligence, and consider them as the essential condition of knowledge. Space is the form which perception, by its very nature, causes external impression to receive, and time the common form of all our intuitions. If, therefore, the faculty of knowledge assumed another form, the ideas we possess of time and space would necessarily undergo a total change.

It is equally evident that intelligence would be considerably modified if the use of intellectual organs, which have hitherto been only revealed by purely fortuitous manifestation, could be effectively developed in us, and these organs be made to obey the will, and work with regularity. Should this be brought about, we should possess penetration in its abstract sense, or, as the French term it, *clairvoyance*, and the faculty of *præcience*.

IMPROVEMENTS IN LOCOMOTIVES.

We gave in our 34th number, the last of the series of engravings, illustrative of the Locomotive Engines, as manufactured by Mr. A. LIVINGSTONE for the Belgian railroads. On a former occasion, we announced our intention of giving the details of these engines on a large scale, with a view more fully to explain their construction, and the manner in which the various parts are connected. These details are now preparing, and will shortly be inserted, together with a popular account of their manufacture generally.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

CHESTER AND CREWE RAILWAY.—The bill for the amalgamation of the Chester and Crewe and Grand Junction Railways, was read a third time on Wednesday. It will proceed through its further stages as rapidly as the forms of Parliament will allow, as there is no opposition to it; the time fixed for the consolidation of the two companies is the 1st of July, from and after which date, the proprietors of the Chester and Crewe Line will participate in the dividends paid by the Grand Junction Company. It is fully expected that this line will be opened in August next.—*Chester Chronicle*.

PROPOSED CORNISH RAILWAY.—The promoters of the proposed Cornish Railway, or those of them, at least, who are interested in the continued prosperity of Falmouth, have now another reason for bestirring themselves. On Wednesday week, a meeting of merchants, concerned in the Peninsular and Mediterranean trades, was held at the London Tavern, at which it was resolved to memorialise government for the removal of the mail packets from Falmouth to Portsmouth or Southampton, principally in consequence of the facilities afforded by the line of railway communication to the two last-named ports. We are not very sanguine as to the retention of the packet-service at Falmouth, even were the railway project much further advanced than it is; but unless some decided steps be taken in the matter, and that speedily, Falmouth will not have a chance of retaining her present favorable position. Independent, however, of this local consideration, the proposed railway would prove of the greatest benefit to the county of Cornwall at large; and we trust that it will not be allowed to languish, even should Falmouth lose the advantage of being a mail-packet station. In connection with this proposed Cornish Railway, the completion of the Bristol and Exeter Line to its further terminus is of the highest importance, unless indeed it should be determined to carry the

new line by another route, upon the merits of which, as compared with that *via* Bristol, we are not, with our present stock of information, competent to decide. Without reference, however, to future extensions, the completion of the Bristol and Exeter Line will confer a great boon upon a large and important district of country; and we are happy to find that the subject begins to attract the attention it deserves. We observe in the local journals a letter from Mr. Bligh, (who spoke at the recent meeting,) in which he proposes to form one of a hundred gentlemen, who may feel disposed to invest £500 each in the undertaking, for the purpose of rescuing it from its present difficulties, and carrying out the original design. The object is most commendable, but due care must be taken in following up Mr. Bligh's advice, "to go into the market and purchase shares," lest the permanent interests of the undertaking should be less promoted than the interests of speculators and jobbers, at whose hands this intrinsically excellent work has already suffered more than enough.—*Railway Times.*

EDINBURGH AND GLASGOW RAILWAY.—The late fine weather has been extremely favorable to the contractors on this line. They have greatly increased the ratio of their earth and mason work; and, as they may calculate on little interruption from the weather for the next six months, this undertaking will be greatly advanced before next winter. The whole line, forty-six miles, is now contracted for; the last $\frac{3}{4}$ miles have just been let, $\frac{1}{4}$ of them to Mr. M'Naughtan, an extensive contractor on the Ayrshire Line, and $3\frac{1}{2}$ miles to Mr. Evans, already a contractor for the three miles nearest to Edinburgh, forming $6\frac{1}{4}$ continuously. Mr. Evans is also a contractor of experience, having been much employed on the English railroads. The letting of these contracts confirms the statement made at the last meeting of the proprietors, respecting the moderate cost of forming the line; and, conjoined with the saving on the contracts for rails, which will arise from the fall on iron, strengthens the expectation which the directors stated at a former meeting, that the line will be executed and opened with the means provided by the act. The public are beginning to speculate on the social and commercial changes which will be effected by the immediate proximity of two such large cities as Edinburgh and Glasgow, and of the alterations which the railway will occasion in the communications between the east and west coasts of Scotland, which will be connected by it. It is difficult to estimate the influence which it will exercise on so large a population as will feel its benefits; but judging from the extraordinary effects of railways elsewhere, and keeping in view that both the Ayrshire and Greenock Railway will be tributary to the Edinburgh and Glasgow, (it reciprocating the benefits,) the influence must be great and beneficial. The counties of Lanark, Ayr, Renfrew, Dumbarton, Stirling, and two of the Lothians, will thus be permeated, affording a new channel for the rapid transit of their people, and of the produce of their industry; and developing the energies, the wealth, and the enterprise of the principal counties of Scotland. At the present period there are upwards of 10,000 persons landing every week at the Trinity Chain Pier from all parts of England, Ireland, and the eastern counties of Scotland, but what may not that intercourse be increased to, when the tunnel of the Edinburgh, Leith, and Newhaven Railway, under the new town of Edinburgh is completed, which will thus communicate with the Firth of Forth, and form the connecting link of all the above railways? The immense intercourse that has taken place between the towns of Ayr and Irvine, since the partial opening of the Glasgow, Paisley, Kilmarnock, and Ayr Railways between these places, on the 5th of August last, evidently proves the disposition on the part of the inhabitants of Scotland to avail themselves of this rapid mode of travelling, being a great saving of time and also of expense. The number of persons who have travelled this short distance of only $10\frac{1}{2}$ miles, up to the present time, exceeds 62,000, being equal to six times the number calculated upon in the parliamentary estimates. On Wednesday, the

25th of March, a further portion of the railway will be opened to the manufacturing town of Kilwinning, and in the month of August this year, the Ayrshire Line will be completed to Glasgow. The Edinburgh and Glasgow Railway will be opened in the autumn of 1841, at which time the tunnel under the new town of Edinburgh will also be accomplished, and the whole communication complete.

EXTRAORDINARY SKEW BRIDGE.—Workmen are now engaged in the erection of one of the most extraordinary iron viaducts connected with any railway, either finished, or in the course of completion, in Great Britain. The viaduct in question will cross Fairfield-street, better perhaps known as Travis-street, Manchester, on the Manchester and Birmingham line of railway. The weight of the iron consumed in this viaduct is 540 tons, and it is composed of six ribs of the span of 128 feet each. The viaduct is also remarkable for its acute angle—such angle being $24\frac{1}{2}$ degrees; the width of the street being only sixteen yards, or forty-eight feet. In attempting to fix the last segment in the first rib, at noon, it was found to be fully 3-8ths of an inch too long, caused, as it was afterwards proved, by expansion arising from the heat of the sun—for on the following morning early, and before the sun's rays could have any decided effect on the iron, it was found to fit its destined place with the utmost possible precision. Messrs. Bramah, of London, are understood to be the contractors—for it is said, £6,000. The work has been done at the ironworks of Messrs. Grazebrook and Co., near Dudley, Staffordshire.—*Manchester paper.*

BIRKENHEAD AND CHESTER RAILWAY.—We are glad to witness the rapid progress of the works on this line of railway, the opening of which, during the ensuing summer, will afford so great an addition to the fund of amusement and pleasurable recreation, which Liverpool, during that season, affords to her numerous visitors. It is worth the consideration of those who wish to form an estimate of the profit likely to be derived by the proprietors of this railway, that it is the *only line out of Liverpool which presents scenery worth visiting*, and which is likely to be resorted to by its "tired denizens" for a passing day's enjoyment. Before many months are over, we expect to hear "a trip to Chester" spoken of with as little concern as a sail to Egremont or New Brighton, and have no hesitation in believing, that the proportion of increase upon the present passenger traffic will very far surpass the calculations of its projectors, or the anticipations of the public. Let us, however, suggest to the directors the advantage they will derive from adopting a moderate scale of fares, and adopting the plan of the directors of the Leeds and Manchester line, with respect to the establishment of an additional or third-class train, for the accommodation of the poorer description of travellers. In many instances, a difference of sixpence will decide the question of journey or no journey; and upon a short line like this, with its favorable gradients and light cost of construction, a few additional passengers will add little or nothing, beyond the duty paid to government, to the expenses of a train.—*Liverpool Standard.*

On the 19th of March, Messrs. Desjobert, Mallet, Berigny, and Mermilliod, deputies of Havre, and other towns of Normandy, had an interview with Monsr. Jaubert, Minister of Public Works, relative to the question of the railroad from Paris to the sea.

M. Jaubert manifested on this occasion the most sincere desire to see an uninterrupted line established between the capital and Havre, passing through the uplands. He declared in the most formal manner, his unwillingness to favor any project tending to carry the line of railroad along the valley of the Seine. According to the opinion of those who are the most acquainted with the relative advantages of these two plans, that of the upland line would be infinitely preferable, and the principal commercial houses of Havre go so far as to consider the line through the valley of the Seine

as prejudicial to the last degree to the interests of that city.

The minister has also announced a similar intention of supporting the project of a railroad from Paris to the Belgian frontiers, across the uplands, considering the advantages of this system as greatly superior to those of any other.

SCIENTIFIC MEMORANDA, AND NOTES ON ART.

AEROSTATIC SOCIETY.—A meeting of gentlemen, devoted heart and hand to the interests of science, will be held on Tuesday next, in the committee-room of the Polytechnic Institution, Cavendish Square. The object of the meeting is,—the establishment of an "Aerostatic Society," to be composed of practical men, whose enterprise and genius will soon cause the usual silly exhibition of "balloons" to be entirely laid aside. We have heard that the new term will be "Aérostate," or Vessel of the Air, a word that implies something on a gigantic and important scale. By the introduction of such a machine as this, the "Royal Geographical Society" may avail itself of some of the many expedients which are to be put in practice, to obtain more accurate information of the interior of Africa; this, indeed, would be accomplishing something worth talking about!

Helicoid direction of Currents.—An observation which may be attended by important results for science, if borne out by other observations instituted by the scientific world to verify the fact, was communicated to the Academy of Sciences at Paris, at the sitting of the 2d of this month. M. Jobard, of Brussels, states, in a very ingenious and lucid manner, his discovery in a well of 600 metres bore, of a double spiral current, so powerful as to disjoint different portions of the sounding apparatus, although these were strongly secured by screws; from this fact, he conjectures that whirlwinds, water-sprouts, trade winds, and even lightning, affect this helicoid, or spiral movement; and goes so far as to presume that the roots of the *hop*, the *convolvulus*, and the *clematis* obey the same law.

M. Séguier presented to the Academy of Sciences, at Paris, two photographic images formed on prepared plates, according to a process far more simple than that ordinarily employed.

"A single rubbing, with the aid of a little tripoli moistened with acidulated water, appears to M. S. to be all that is requisite to clean the plates.

"The lengthened operation of polishing with oil, also the heating of the plates, after and before washing them with the acidulated water, are entirely superseded.

"This method of preparing the plates is effected in two minutes."—*Comptes Rendus.* 10 Mars, 1840.

Mousselines de Laine.—Useful Chemical Test.—The introduction, not long since, into trade, of manufactures bearing the title of Mousselines de Laine, and which have every year been becoming more and more popular on account of their suppleness, and the brilliancy and solidity of their colors, is now beginning to be felt by the cotton-spinners. The great demand of late has given rise, on the part of the latter, to a spurious article to undersell these beautiful tissues, in which cotton enters as a very important constituent. We have recently examined some of these imitations, and have found, in some instances, the wool and cotton in equal proportions.

As the price of this merchandise varies according to its purity, we shall put the purchaser into possession of a means by which he will be enabled to detect the presence of cotton in any spurious woolen articles, such as flannels, Mousselines de Laine, &c.; a means so simple, but at the same time so infallible, that it will be his own fault if he ever afterwards allows himself to be defrauded.

Take four parts, by weight, of the tissue you desire to examine;—introduce these into a white glass

phial half filled with water; dissolve therein three parts by weight of caustic potash, and boil during a few minutes. Then pass the liquid through a filter; the best thing is a bit of fine linen rag stretched across a tumbler,—and the cotton will be found thereupon; dry the filter and its contents, carefully detach the cotton, weigh this, and the proportion it bears to the original quantity of the suspected article submitted to the test, will give you the proportion of the cotton to the wool in the actual merchandise.

In order to boil the test liquor, place the phial upon burning charcoal or clear cinders; if the phial is of white glass, there need be no apprehension of its breaking.

Having submitted spurious articles of the above nature to this test, on very many occasions, we are happy to say we have never failed in the experiment, our analysis being always found exact. The principle of the experiment is founded upon the property possessed by caustic alkalis, of dissolving organic animal matters and of converting them into a saponaceous solution; caustic alkalies having no effect upon organic vegetable productions.

Galvanisation of Iron.—Certain galvanised substances possess the property of being indestructible by the action of atmospheric agents; neither rain nor air can cause galvanised iron to rust,—a matter of great importance to manufacturers and to persons of property in general.

Galvanised Sheet Iron, which has none of the inconveniences of ordinary sheet iron or zinc, united to all the advantages of the latter, others peculiar to itself.

Possessing the same solidity and the same force of cohesion as ordinary sheet iron, together with the incalculable advantage of being totally secure from the effects of oxidation, it offers to become the source of considerable economy; inasmuch, as for many purposes of industry, galvanised iron may be used in very thin sheets, which, were common iron made use of, would require to be of considerable thickness to resist the ravages of rust.

Employed in cowls and chimney flues, galvanised iron is exempt from the necessity of being painted, besides which economy, the roofs of buildings, constantly liable to injury from workmen frequently passing over them to examine, detach paint, or restore chimneys, or parts thereof, will by its employment remain many years uninjured. How often also, from the effects of rust, are cowls blown down, thereby occasioning accidents of a very serious consequence!

Galvanised sheet iron may advantageously replace zinc, as well from the above mentioned intrinsic quality as from its greater solidity, which enables it better to resist the shocks or blows of hard bodies. In many instances, it may be made to replace cast iron, as in water channels; while its employment for the latter purpose, in gardens or in houses, where hitherto tubes of common sheet iron have been excluded, from their liability to rust, will be no less general than useful.

In roofing, galvanised sheet iron possesses one very great advantage over zinc, in cases of conflagration; while zinc speedily inflames and emits innumerable sparks, galvanised iron resists the action of caloric and roofs of this material; it may therefore be safely passed over by firemen whose feet would be subjected to grave injuries from burning zinc.

In a word, galvanised iron may be looked upon as common iron and zinc united; minus the inconvenience or danger of either. With respect to its imperishability and tenacity, it is quite equal to copper; indeed, in the latter property, it is superior to this metal. It will be found of incalculable advantage in lining the walls of storehouses and magazines, where the ingress of humidity is to be apprehended and provided against.

For roofing, in addition to the superiority just mentioned, it offers considerable economy over the employment of zinc, slate, or even tiles; while, on the other hand, the rafters, where this is used, from not being compelled to support so considerable a weight, may be of a much lighter construction.

Galvanic colors may be advantageously substi-

tuted for minium and white lead, in painting iron and wood, or walls of rooms, as they are not liable to blister or chip from the alternations of heat and cold; while, at the same time, they are much less expensive than the latter.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
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Bermuda	Grenada (New)	Quebec
Brazils	Hallifax	Spain via Cadiz
Bremen	Hamburgh	St. Domingo
Buenos Ayres	Heligoland	St. Kitts
Canada	Honduras	St. Lucia
Caracas	Ionian Isles	St. Vincent's
Carthagena	Jamaica	Tobago
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It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 O'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their News-men, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 8, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"Amicus."—We have written, by post, as requested.

"G. Bodmer."—Thanks; your favor has been received, and your wishes shall be attended to.

"An Inquirer," Manchester.—The arrangement has only been deferred,—not lost sight of. We have put it in force in our number of to-day.

"A Shareholder in the Birmingham Railway."—Our Correspondent is informed, that the article on "Railroads from their commencement" was completed three weeks ago. It may be referred to as a trustworthy document, and will afford all the information required.

"James Furness," Basingstoke.—We will inquire at the office you mention; and communicate by post.

"Mechanic."—Not after the specification has been enrolled.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, APRIL 4, 1840.

We have elsewhere inserted a second letter from the solicitor of Mr. PINKUS, threatening to proceed against us in another form if we publish the specification of his invention. In the first attempt to intimidate us, we were threatened with an action for damages for any injury which the Patentee might sustain from the publication of his specification, and Mr. MARDON, the solicitor, affirmed that the English law does not authorise the printed publication of specifications to the injury of the Patentee. We presume, from having received the second notice, in which a different form of action is threatened, that a further consideration of the English patent laws has induced Mr. PINKUS's legal adviser to alter his opinion. The plea now is, that the publication would be an infringement of "the copyright of an Essay on motive powers, embodying the specification of a patent, granted to him (Mr. PINKUS) as the author," &c.

We confess we are somewhat at a loss to comprehend the legal mysteries of this second notice. If the Patentee have really printed and published such an Essay, at a date prior to the sealing of his patent, as the meaning of the words implies, we cannot conceive the ground of his complaint against us. That publication would not only effectually bar him from afterwards taking out the patents in foreign countries, but would render his English patent invalid, and he has thus become the destroyer of his own interests. The "Essay" we have not seen. Our account of the invention, given in the *Inventors' Advocate* last week, was taken from the enrolled specification, which is open to all the world.

Mr. PINKUS and his legal adviser seem to be entirely ignorant of the fact, that no man possesses a right of property in an *invention*, even though it be his own. The property is in the *patent*, not in the *invention*. This is so strictly true, that if a person imprudently disclose his invention, the party to whom the

secret is confided, might obtain a patent for it, to the injury of the inventor, who would have no legal remedy against him, unless he could prove an agreement. If, therefore, the law would afford Mr. PINKUS no remedy, even had we filched his invention unfairly, and obtained a patent for it to his prejudice, it is absurd to imagine that a jury would award him damages for supposed injury to a property that has no existence, and to the acquirement of which he has no *legal* claim.

We are not sorry that this question has been raised, as it will set at rest any erroneous opinions that may exist respecting the right to the publication of specifications.

The legal interpretation of what constitutes a publication, is very comprehensive; even the act of putting a letter into a post-office has been deemed a publication in law. The publication of a specification of a patent invention may, therefore, be considered to take place directly it is enrolled. From that time it is open to the inspection of the public, and copies of it may be procured by any applicant, on payment of the office fees. That we have a legal right to extend this publication, by printing the specification in our Journal the day that it is enrolled, we entertain not the least doubt; but, in order to suit the convenience of some Patentees, and not to take them by surprise, we have adopted the plan of giving them notice of our intention one month previous to the publication. The parties who are principally injured by the early appearance of specifications in a public journal, are those pirates of the products of inventive genius whom we denounced in a former article. We allude to our reply, in No. 30 of our Journal, to a correspondent ("J. D."), who urged, but in a very different tone, the same objection to the publication of specifications now made by Mr. PINKUS. To that letter, and our answer, we particularly refer our readers, as the subject is there entered into at great length. To inventors, to the public, and to patentees themselves, we believe the plan of publication to be generally advantageous, and in proof of our sincerity in this opinion, we have never withheld the publication of the specification of any invention in which we ourselves, or our clients, have been interested.

Whether the term permitted for enrolling specifications be not too limited, is a question well deserving consideration, but as the law at present stands, the Patentee who has failed to procure patents in foreign states for his invention, prior to the enrollment of his speci-

fication, has no protection whatever from pirates. It surely must be less obnoxious to him, as well as more beneficial to the community, that his invention should become public property in those countries, than that it should be monopolised by parties who have no claim to it beyond priority of appropriation. We will, for example, take the case of Mr. PINKUS's invention. We understand that he sent out instructions by the *British Queen* steampacket, to secure the patent of his invention in the United States; and that it was his intention to send out, by the next packet, to secure his patent right to the invention in Texas also. The printing of the specification in the meantime, he says, will prevent his doing so, and of this he complains. But if his object were to secure the patent in the Texas, he ought, as a prudent man, not to have allowed a single packet to leave England without sending out instructions for securing the exclusive use of the invention there. Any passenger by the *British Queen* might have gone out with a copy of the specification, obtained at the enrollment office, and by proceeding immediately to the Texas, have obtained the monopoly of the invention, even to the *absolute exclusion of the original inventor*, should he afterwards wish to introduce his machines into that country. Irritated as Mr. PINKUS may feel that his want of despatch may have deprived him of the monopoly in the Texas, he would feel infinitely more enraged were he to find another party profiting by his inactivity, and that he was not allowed to enter into competition for the supply of the machine of his own invention.

That the original inventor should have the fruits of his industry snatched from him, and be precluded from competition with the purloiner of his invention, is so monstrous a perversion of right as to need no comment; the speedy publication of specifications, when enrolled and open to public inspection, is the readiest mode which at present exists of preventing such flagrant injustice. Our attention has been directed to the point, whether we might not accommodate Patentees by withholding the publication of their specifications on their application to us to do so; but after the most earnest consideration of the subject, we have decided against such a proposition. If we once began that system, the applications would be so numerous, as to render the publication of the remaining few specifications altogether useless. We are, therefore, inflexible on that point, and again wish to impress upon our readers that we have never deviated from

our plan of publishing *all* the specifications as they become due, in a single instance, and that consequently we cannot be justly charged with favoritism.

We are fully persuaded we are conferring a great boon on Inventors generally, by breaking down the nefarious system of purloining inventions from the enrollment office, which has been carried on to an extent, and with a degree of audacity, that would scarcely be credited. The simple fact is, we have introduced a sweeping reform, and, as in the case of every reform, a few persons may suffer in their private interests; but conducting our Journal as we do, on a fixed principle, we must look only to the benefit derived by the greater number. That the advantages of the early publication of specifications far outweigh any occasional private loss that it may occasion, is proved by the numerous letters of thanks we receive. We have been the means of enabling many inventors to secure valuable foreign patents for their own benefit, who without our notice would not have known they could obtain them, and would have become victims to the "invention-hunters," who prowl round the enrollment offices, ready to seize upon and appropriate the labors of others.

MR. GREEN'S APPARATUS FOR GUIDING BALLOONS.

The interest that has been excited by the exhibition of Mr. Green's apparatus for guiding balloons, induces us to return to the subject. We do this with the greater readiness from feeling assured that, whether aeronautics is to be made available as a means of transit, or not, it will, at all events, be ever an object of attention to speculative enquirers, and that the inventive genius of man will never be satisfied until he has either accomplished the means of traversing the air at pleasure, or until such a project be proved to be impossible. We take more than common interest also in this invention, as the plan adopted by Mr. Green is the same that we recommended, in an article on the Practicability of Artificial Flying, which appeared in the *Inventors' Advocate* on the 8th of February. A similar principle was announced in a paper, by the writer of this article, which was read at a meeting of the Wakefield Philosophical Society, three years since. Whether Mr. Green has availed himself of our suggestions, or whether the principle occurred also to him, without having read what we had written, we are not aware. In either case, we may claim some merit in the invention, from

having been first in the field; though the method we recommended of obtaining a "hold" on the air, is applied by Mr. Green to a balloon, and not to a machine for rising in the atmosphere by mechanical power alone.

Our last notice of Mr. Green's experiment was appended to an article, previously written, on Aerial Navigation; consequently, we had not space to enter so largely into the consideration of Mr. Green's invention as it deserved. We shall, therefore, now describe more minutely the nature of the apparatus, and state more fully the views we entertain of its advantages, and its capabilities as a means of guiding balloons.

The vanes employed by Mr. Green for propelling the model balloon, consist of two thin strips of ivory, about two inches long, and one inch wide in the broadest part. They are narrower towards one end, which is fixed to the revolving axis by means of a piece of cork, and are placed in such position, that when they revolve they strike the air obliquely, exactly like the sails of a windmill.

If the sails of a windmill were made to revolve rapidly against the air, instead of being set in motion by the air acting against them, the force thus acquired would propel the sails and the axis to which they were fixed, to a considerable distance from the mill. This effect is exemplified in the small apparatus adverted to in our article on Artificial Flying. It consists of four small vanes, placed like the sails of a windmill, which, when a rapid rotary motion is given to it by a string wound round its axis, flies with great velocity to some distance, either horizontally or upwards, as it is pointed. Mr. Green employs only two sails, or vanes; partly to make the apparatus lighter, and because he finds that the action of four vanes does not double the propelling power. He therefore prefers two vanes, with increased velocity, instead of gaining the same power by four vanes, with a less rapid motion. Experiment only, on a large scale, can determine the sizes, number, and velocities of the vanes that are most effective in practice. The rudder of the model balloon consists of a piece of pasteboard, which is fixed vertically at what must be called the stern of the car. When this rudder is placed at right angles with the revolving vanes, the balloon, if there be no currents of air to alter its course, proceeds in a straight line in the direction to which the rudder points. If the rudder be inclined on one side, the resistance which its surface presents to the motion through the air, on that

side, causes the balloon to take a circular course; the rudder pointing towards the centre round which it revolves. A small weight, fastened by a string to the car, touches the ground, and operates as the "guide rope," in retaining the model balloon at the same elevation. The vanes are put in motion by a spring connected with wheel work, which keeps in action two minutes. The model balloon is about two feet in diameter; it is filled with pure hydrogen gas, and supports nearly half a pound, independently of the silk and netting.

In working the apparatus on a large scale, Mr. Green proposes to use manual power, and the revolving motion is to be communicated to the vanes by an universal joint, which will enable the aeronauts to turn them in whatever direction they may be pointed. As it is not proposed to obtain a resisting force to the wind, it is evident that the degree of deviation in the motion of the balloon from the point to which the wind blows, must depend altogether upon the force of the wind compared with the action of the vanes, even allowing they acted in the most advantageous manner. Suppose, for instance, the wind was blowing with a force sufficient to carry the balloon at the rate of ten miles an hour, and that the vanes could be worked so as to gain a propelling power of the same amount. In this case, (admitting that the vanes could be kept pointed in the required direction,) if the wind were blowing from the north, and the mechanical power were directed towards the west, the balloon would be moved in a direction exactly south-west; for the two forces being equal, and acting at right angles, the direction of the motion would be in the diagonal of a square. If, however, the force of the wind be increased to twenty miles an hour, the course of the balloon would be south-south-west; and in proportion to the increase in the velocity of the wind, the power of altering the direction of the balloon, by the mechanical power, would be diminished. But if the degree of power in guiding balloons we have thus supposed be attainable, it would prove of inestimable value; for as the propelling force might by subsequent contrivances and appliances be increased, we should consider the great problem of aerial navigation to be solved, and we should expect the fields of air to be shortly occupied with numerous voyagers to all parts of the world.

The chief difficulty, however, which we fear still remains to be surmounted, is, to keep the vanes pointed in the right course. The ex-

periments with the model balloon show, that the least current of air changes the direction of the vanes, and causes the balloon to swerve from its course. It is stated, indeed, that when there are persons in the car to steer, the change in the position of the rudder will bring the "head" of the balloon round to the wind. We conceive that this opinion is founded on the notion, that the rudder will have the same effect on a balloon in the air, as on a ship in water. The difference between the two, we have previously pointed out in former numbers of our Journal. The want of a resisting force to the action of the wind, will prevent the rudder from having that effect. The great increased resistance which a ship's rudder can produce to its motion, in water, is not analogous to the action of the rudder of a balloon, every part of which floats in the same homogeneous fluid, that acts equally on the body of the balloon as on the car and rudder.

It must be borne in mind, that the action of the atmosphere is very different on the car, from its action on the balloon. The latter is forced upwards by its superior levity, whilst the car and its contents have a tendency to fall to the earth. *The car is not propelled by the wind*, it is dragged through the air by the balloon; and if the connecting cords were sufficiently long, the balloon would be considerably in advance of the car. If any attempt be made to give the car a directing power over the balloon, by resisting the action of the wind, the reacting force of the air against the suspended car, would make it turn round into that position which offers the least resistance to the wind. In our opinion, therefore, it will be impossible for the aeronauts to keep their rudder exposed against the action of the wind; for when the rudder is expanded, it will always be blown, like the broad vane of a weather-cock, from the point whence the wind blows. The rudder would, in that case, be almost useless, excepting when the mechanical power was acting directly against the wind. In a perfect calm, indeed, the balloon might be guided by Mr. Green's propellers, aided by the resistance of the "guide rope;" but as a means of guiding balloons in the ordinary states of the atmosphere, we consider the invention to be of little avail.

It is not, however, to guiding balloons in a horizontal course, that Mr. Green's apparatus is confined. Its chief value depends on its application in an ascending and descending direction, so as to cause the balloon to ascend or descend without the loss of gass or ballast. In producing this effect, the action of the re-

volving vanes, when placed vertically below the car of the model balloon, is most satisfactory. This power of ascending and descending will prove of the utmost value to aeronauts; as they may be able to keep their balloons always inflated, and ready for an excursion through the air without expense. In consequence of this increased facility of ascending, accompanied by the great advantage of regulating the descent at will, we may expect to find balloons coming into frequent use.

NEW INVENTIONS.

ENGLAND'S PATENT UNIVERSAL SCREW JACK.

We have here a perspective view of England's Universal Screw Jack. A, represents the common lifting jack, placed on a strong iron frame B, with the screw C, the whole length of the frame (about two feet) working in bearings at each end, and through the double nut D D, attached to the base of the jack A; the screw C, being worked by

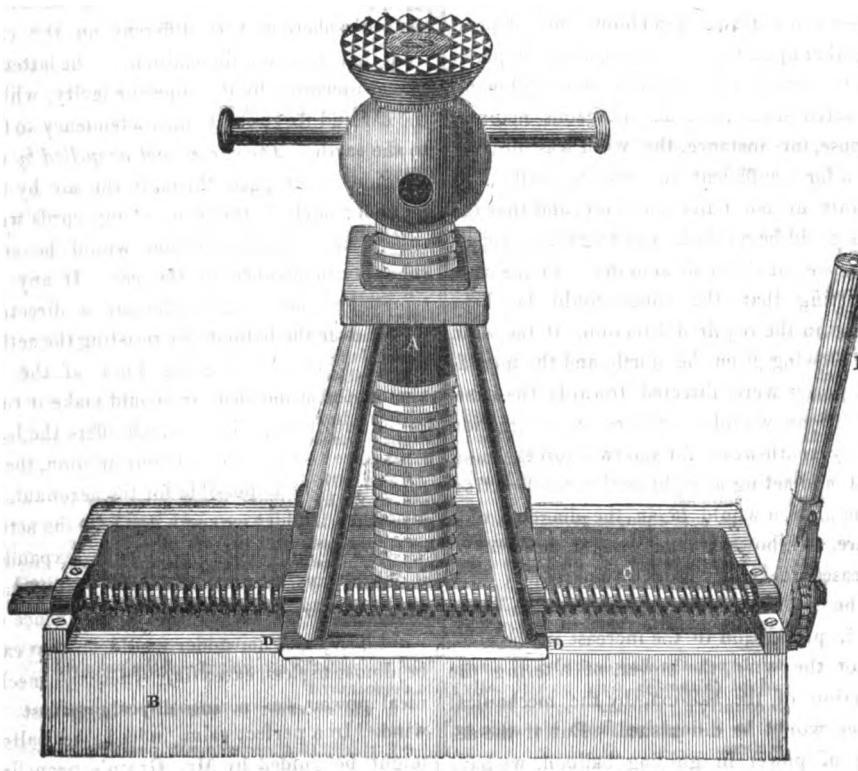
ratchet lever E, will cause the jack to traverse the length of the frame, carrying with it any body that may have been lifted by it.

It is particularly applicable to railway purposes, as in all cases it answers the purpose of the common lifting jack, and also embraces the advantage of a lateral motion, by which the operator can, with facility, move a body laterally after it has been raised vertically; also in cases of engines or carriages being thrown off the line of rails by applying the Universal Screw Jack, they can be replaced in a very short space of time compared with that required when the ordinary jacks are used.

The object of the inventor is to carry one with every train, so that in case of an accident occurring on any part of the line where there is great difficulty in obtaining assistance, the engineer and his assistant will be sufficient to set to rights any accident of ordinary description in a very short time, with the assistance of the Universal Screw Jack.

They may be seen in use upon most of the rail-ways diverging from the metropolis.

The Universal Screw Jack has been approved of, and patronised by, the following eminent engineers:—Messrs. J. K. Brunell, R. Stephenson, J. Braithwaite, J. U. Rastrick, E. Bury, and J. Gibbs.



NEW MANNER OF MANUFACTURING CLOTH.

A patent has recently been granted for making the finest cloth for gentlemen's coats, &c., without spinning, weaving, or indeed without the aid of any machinery similar to those processes, and at a cost less than one fourth the present price. The most extraordinary circumstance in this contrivance is, that air is the only power used in the manufacture of the article. The ingenious inventor places in an air-tight chamber, a quantity of flocculent particles of wool, which, by means of a species of winnowing wheel, are kept floating equally throughout the atmosphere contained therein. On one side of the chamber is a net-work of metal, of the finest manufacture, which communicates with a

chamber from which the air can be abstracted by means of an exhausting syringe, commonly called the air-pump, and, on the communication between the chambers being opened, the air rushes with extreme vehemence to supply the partial vacuum in the exhausted chamber, carrying the woolly floccula against the netting, and so interlacing the fibres, that a cloth of a beautiful fabric and close texture is instantaneously made. Several of the specimens of this cloth that have been shown to scientific gentlemen, and manufacturers, have excited great admiration. This cloth is a species of felt, but instead of adopting the old laborious method, the above, which is denominated the pneumatic process, is used, and produces the result as it were by magic.

NEW CANAL LOCK.

This lock is so constructed, that by means of it a boat may pass up and down, from one level to another, without any expenditure of water. A moveable box is made to rise and fall in the lock by means of water admitted into it through a siphon, and this water is returned again by the siphon into the upper level of the canal. As the box or moveable lock rises, in the permanent lock, the boat falls; and as the lock falls, the boat rises. Mr. Chapman calls it "The Siphon Lock," and there appears to be no doubt in the minds of those who have seen its operation, that a canal provided with such locks would require but little more water than would be sufficient to supply leakage, seepage, and evaporation. Should there be found no difficulty in the operation of this new lock, of which we believe there is no doubt, it is thought the quantity of water sufficient would be so small, that a canal may be excavated and successfully used on almost any ground practicable for a railroad.—*American paper*

NEW WAR ENGINES.

M. Jozin, an old officer, who has taken out many important patents, has just presented to the minister of war the models of two new war engines. The first is a ball-proof moveable *embuscade*, intended to move before, and give defence to, a considerable number of men. It is a sort of carriage, which may be said to unfold, or, in other words, stretch out and form a wall pierced with loop-holes. It is pretended that this apparatus will be of immense assistance in retreats and in *prises d'armes*, where a small number of men are compelled to resist the attack of a major force.

The second is a train of musquetry, by means of which a man may discharge 1,500 large barrels per hour. He may give to each barrel any direction he pleases, with the velocity of thought. The twelve barrels are loaded, primed, and fired, at one and the same time.—The models are to be seen at the inventor's, No. 14, Quai St. Paul.

FINE ARTS—PARIS.

THE EXHIBITION OF THE LOUVRE.

Whether we visit the annual exhibitions of London, or Paris, Brussels, the Hague, or elsewhere, we partake of the same feeling of disappointment which appears to pervade the great majority of the spectators. Each successive exhibition strikes us as being inferior to the last, and we are compelled *bon gré malgré* to mingle our regrets with those of the public and connoisseurs. That, in many instances, this apparent degradation is but too real, cannot be denied, but it may be seriously doubted whether the impression does not arise from the palpable difference between the rapid progress of science and industry, to which our attention is daily and hourly directed, and the slow and labored march towards perfection in the modern schools of painting. The united efforts of governments, and of illustrious and munificent patrons of all branches of the fine arts, and more particularly of the pictorial, have done much in latter times to call forth and foster genius; but it will yet be long before the world produces rivals of such men as Raphael, Corregio, Van Dyke, or Titian, and it is only then that painting can assume an equal rank with arts, which at present have eclipsed her. The above contrast is far too striking not to merit some consideration, and we feel convinced that were this done, and a just appreciation made of its influence upon the judgment, the causes of our regret would shortly vanish. The confluence of visitors this year to the Louvre is by no means so great as on many preceding occasions; why it is so, we are unable to conjecture, for if there is much to condemn, there is still enough to excite interest and gratification.

The drawing of the French school is admitted to be better than that of our own, and the painters of that country, with some rare exceptions, are characterised by a more profound depth of thought, and

a finer conception of the grand, than are the English, Dutch, or Flemings. With respect, however, to their coloring, they do not excel these nations, but, on the contrary, are servile imitators of every school; some among them imitating the Italian school of coloring, others the coloring of the Flemish, others again the *leché*, of late years become so common in England,—a style which, however at first flattering to the eye, soon ceases to please; firstly, because it is unnatural, and, secondly, because it is only employed to supersede the harmonious blending of the old masters, which these painters are unable to imitate. As to the Spanish style of coloring, recently become popular in France, instead of the vigor and rich tone of Murillo and Velasquez, we confess we see in these pretended imitations nothing but an unmeaning obscurity, and heavy grimous tints. Painters in England, and indeed those of the Low Countries generally, certainly imitate the various styles of other schools, but they are more happy in the manner in which they introduce them, and seldom err in the choice of the one they may think proper to adopt for any particular subject; nay more, they frequently unite various styles in the same picture, but with such consummate skill as almost to defy detection, so completely do they assume therein a perfect homogeneity of character. Let a foreigner enter the Louvre, and endeavor for a few instants to shut out from his mind the fact of his being in Paris—he will be prepared to exclaim, "what an assemblage of pictures of all nations; but stay, how is it we have nothing from the French!" He might parade this mighty gallery for hours, if the above illusion were kept up, and search in vain for what he would choose to term a French picture. It may be truly said the arts have one common inspiration. When the literature of a nation ceases to possess a distinctive character, its painting becomes equally vague. French painting, like French literature, has adopted every style. This literary revolution has created a revolution in the arts. The classic school of poetry lasted long, so likewise did the classic school of painting; they were both extinguished by the romantic. But the monstrous forms of romantic literature, and the absurdities of romantic painting and sculpture, have had their day, and it is well they are both falling in public estimation.

Let us see to what, for want of original ideas, the French school has during the last twelve months owed its miserable existence, and commence by those subjects in which the poetic art should predominate more than in all others, namely, those taken from the Scriptures, and they are this year so numerous that the catalogue resembles one of the many publications in England of texts for every day in the year. It is well known that the epidemic of German mysticism, which has lately turned the brain of so many young poets, has made equal ravages among painters, although their art seems less likely to be imbued with the highly colored reveries of spiritualism. The painters of the German school pretend to a higher character for ingenuous simplicity than the old catholic painters ever aimed at; but they are in error, the latter possessed this divine gift without being aware of it; and the proof of this is, that although living at a period when superstition, and the grand, yet sombre mysteries of the church, were in full sway, they were elevated by their genius above these, and drank, at the source of christianity, draughts of pure and pious inspiration. They were ingenuous and simple in their very natures, and their feelings were reflected on their canvass. The modern painters of the German school affect simplicity, by far the most affected of all affectations. Overbeck and Cornelius are doubtless great artists at heart, if we may be permitted to judge of them by the engravings we possess of their works, but we cannot help thinking it a great proof of the want of creative genius, when we see painters occupied on subjects remote from their own times,—subjects which were of the times of those who treated them so grandly. However admirable, however perfect, however well a subject may be felt, when but an imitation of one of by-gone days, it wants the stamp of greatness. It is indispensable

to art, at every epoch of history, to reproduce the character of the times, so that posterity, for want of other information, may study this, without the fear of falling into error. When a connoisseur is shown a picture without name or date, he will exclaim, unerringly, if it be so, "here is a picture of the 15th century; the delicacy of touch, the warmth and vivacity of coloring, the divine suavity of expression in the principal figures, the ingenuous and simple poetry of religious thought, the bold daring of anachronisms, all prove it to be of that period." And whether it be of the Italian, the Flemish, or the German school, he will tell you so at once, and no less unerringly. The fact is, the leading character of the painting is the character of the period at which it was executed. But place before the same connoisseur a picture of the school of Munich, made by art to wear the appearance of age; he will look at it in every light, turn and thrust it about, go up to it and retire from it, shrug his shoulders, look confused, then all at once, as if detecting the master, cry out, "It's a Perrugino. No.—Why it must be a Giotto or an Orgagna,—and yet this ear is decidedly a Raphael's."—He will hesitate again for an instant, and suddenly turning round upon you, with a bitter sneer exclaim, *a Pasticcio!*! A *Pasticcio*, however perfect it may be, does not characterize an epoch; but the worst is, that some years hence such a picture may lead to confusion, by being attributed to a period two or three centuries antecedent to the one in which it was really painted. Falsehood in painting, as in everything else, is the bitter enemy of all.

(*To be Continued.*)

LES GUEPES; PAR ALPHONSE KARR.

(Continued from our last.)

Two of his most ferocious wasps, (for Karr has a considerable collection of them, all bearing significant names,) *Padoche* and *Grimalkin*, are set loose upon Louis Napoleon, and they certainly mangle him in a style that must strike terror into all who are guilty of being *ridiculous*, a crime in France of the first magnitude, a crime never forgiven, never forgotten.

"The Prince, followed by six other maskers-attempted the capture of the *garrison of Strasburg!* One sergeant and his wife were sufficient for the capture of Louis's entire army.

"Ridicule has always been considered in France the most destructive of all weapons, none, it is said, have ever been known to survive its blow. This is an error; if ridicule kills, Louis Napoleon had been long since dead; but we recently heard of him at the Egliotourt pantomimes.

"No one in France ever thought seriously of the pretensions of Prince Bonaparte, who put forward certain rights, the suppression of which was the unique cause of the elevation of his uncle.

"Besides, Prince Louis is much fatter than Napoleon, at his return from Elba; another reason why he is unfit to reign.

"It was certainly not the happiest idea of Louis Napoleon to adopt (although only provisionally) England for his country; particularly as the British government put to a lingering death his uncle on the rock of St. Helena.

"At all times conspiracies have been in vogue in France, but in general there was neither danger nor inconvenience in these amusements. Ask the question of Mons. Amilhan, the deputy and president of a royal tribunal."

"THE CONSPIRACY OF M. AMILHAN, TO SERVE AS A SEQUEL TO THE CONSPIRACY OF PIESCHI."

"M. Amilhan conspired under the restoration. Every one conspired in those days. M. Amilhan went every day to conspire after dinner, which considerably aided his digestion. This lasted ten years, during which time he was never known to fail in his daily rendezvous. Neither was he ever known to commit an indiscretion.

"One day at the end of ten years, one of the conspirators demanded to be heard; he was permitted to speak,—to the great annoyance of the other conspirators at the *whist tables*.

"Gentlemen," said he, "it is time to be up and doing."

"What, what?" observed M. Amilhan, "what does that gentleman mean, who does he take us for? Who does he take me for? Know sir," he continued, addressing the bold conspirator, "Know sir, that I am an honest man, and incapable of doing any thing against the laws of my country."

"M. Amilhan then put on his hat and gloves, took up his walking stick, and issued forth,—never to rejoin his brother conspirators.

"In all conspiracies there are men who raise up the edifice according to the rules of classic tragedy. They consult the best models, and observe a certain unity throughout."

"A WORD TO THE REBELLIOUS."

"In this sort of conspiracy, one of the most respectable men of the committee keeps a register divided in red ink into six columns, in these divisions are inserted the name,—the dwelling,—the age,—the place of birth,—as well also as the arms which each conspirator is capable of employing.

"The last column serves for observations on their courage and devotion, as well also as little anecdotes of their previous history.

"This is a very old principle in the theory of conspiracies, and answers wonderfully the purpose of the chiefs or prime movers;—it is indispensable to the perpetration of the third act.

"A conspiracy may be as agreeable as any other pastime to Prince Louis, but it is certainly unfortunate to the blockheads who risk for him their fortune, their liberty, their present, their future.

"In one of the old Greek republics, I forget which, whoever came to present a new law, came with a cord about his neck in readiness to be hanged in the event of the law not being considered worthy of the principles of justice, by which the judges were animated.

"It is a pity this measure could not be revived, and applied to the inventors of new governments.

"If we must however become the subjects of a parody of Napoleon, we should certainly prefer to Prince Louis, Mons. Edmond of the Olympic circus.

"Mons. Edmond played Napoleon two hundred times with prodigious success.

"Prince Louis played Napoleon but once, and was tremendously hissed."

The following is not one of the least interesting of these admirable satires, it is a happy hit at the republicans in France, and with very few alterations might be made to apply equally well to the democracy at home.

"The little gust of Bonapartism just alluded to, has blown by without occasioning any destruction of property, but we have now a new form of government proposed, which government has recently proposed a charter.—This government calls itself a democracy. For my part, if I were permitted to take the liberty, I should call it a government of savages.

"Where," exclaim the savages, "in these troubled times is the sovereignty of the people? Where is democracy?"

"I will endeavor to answer you, government of savages!

"I think that government passably democratic which allows M. Cormenin to comment on the charges of the king's washerwoman, and to publish a pamphlet in which he declares that the king uses too many boots.

"To say nothing of a prince royal under such a government not daring to refuse an invitation to a ball from a commoner,—M. Dupin.

"Or Madame Barthe hanging out her baby linen on the balconies of the Place Vendôme.

"Or M. Coulman, an old Allassian deputy, refusing to dress decently to go to the king's levee, and asking if they take him for a Marquis.

"Or M. Dupin telling the prince royal on the occasion of his marriage,—The princess of your highness's choice will be favorably received by us,—our manners, so widely different from the stateliness of the olden courts, will soon become familiar to her."

" PARENTHESIS.

Poor princess,—Mr. Barrister Dupin was very right,—you have not found our court of France what it was in the olden time, the abode of luxury, festivities, joyousness, love, and beauty; a court full of nobility and chivalry, and so envied in those days, that princesses dreamed of it as a terrestrial paradise, to possess which, they believed they could hardly hope to offer sufficient beauty, wit, and grace. The belles of all countries, of all courts, came to give proof before the court of France, that they were really beautiful.—The flower of the nobility of other lands came to the palace of Versailles, to learn if they were really, what they were told they were at home, rich, splendid, and of noble bearing. The judgment of the court of France was then irrevocable—beyond it there was no appeal.

" What M. Dupin observed is indeed true,—The court possesses no longer that stateliness.

" National Guards go to it with white plated buttons, Deputies go in boots, plaid cravats, and beaver gloves; M. Barrister Dupin goes without gloves, and in ungartered stockings, speaks loud, and—is listened to!

" Ah! this is not democracy, Gentlemen savages.

" In the present state of society, some have, to the exclusion of others, the monopoly of education, the monopoly of wealth," says the savage government,—The monopoly of wealth! Aha! I have you now, the secret's out.

" But listen, gentlemen savages; money is the fruit of labor; those who have what you are pleased to call the monopoly of wealth have also the monopoly of fatigue, cares, and nights of restlessness. They have, also, the monopoly of order and economy.

" Every one has the right to live upon his income, whether that income be derived from the toils of his father, or from his own industry. Perhaps, gentlemen savages, you would prefer living upon the incomes of your neighbors?

" What I said of the monopoly of money, I now say of the monopoly of education; in order to know it is necessary to learn, and the store-houses of knowledge are certainly not the publication, gentlemen, of your friends the journalist savages. What you would prefer, I doubt not, is knowledge without previous study. That monopoly lies open to you,—at least I think no one yet enjoys it.

" They tell us we have religious liberty; but the government opposes itself to the exercise of certain cultes, and to the expression of doctrines which transcend those of privileged sects.

" In the name of Heaven, what would you wish to adore? Is it some African *fetiche*?

" Beside the throne you have a protestant princess.

" Among your deputies in parliament you have at least one Jew.

" The Abbé Châtel was not long since consecrated a bishop by a Parisian grocer, and preaches a culte of his own invention, sometimes in a stable, sometimes in a booth.

" Have you not opera music in Musard's church of our Lady of Loretto?

" Has not some ignoble corn-cutter of late publicly professed the doctrines of Johanna Southcote?

" Do not the Templars meet twice a week?

" Have not Fourrier's disciples their public worship, as the St. Simonians have had theirs?

" And you, gentlemen savages, have you not met to discuss and put to the vote the recognition of a Supreme Being?

" Great must have been your discomfiture when the question was carried in favor of such recognition, although only by a majority of one.

" No, no, gentlemen! be as just as you can. I think you would find it rather difficult to transcend farther the doctrines of the privileged sects you appear so much to envy, than by endeavoring to pronounce the fall of the Almighty, which was evidently the expected result of your meeting; and yet no one interfered with you.

" And what have you advanced that hath called forth a statute of limitation from your tyrannical Christian government? Would you desire to worship a croco-

dile, or an ox, or a beetle, or a lizard; a vishna, an apis, or the fire of the Ghebres? Or would you prefer to worship one of yourselves?

" Gentlemen savages! Adore each other, depend on it no one will interfere with you.

" The fact is, you desire to suppress religion, as you desire to suppress property; and what astonishes me is that you should have concocted such a long-winded charter. How much more to the purpose, how much more sublime would have been a charter like the following:—

" THERE IS NOTHING!

" God knows there is but little left.

The *Democratic Herald* was to have appeared on the 1st of February; however it did not. It is rather a pity, for if I may judge of it by the proof of the first number, it must have been very curious. I am now very glad that I took the precaution of abstracting a few articles.

" POLITICS.

Hackney coachmen will not move for less than 20 francs an hour.

" The people are presenting each other with orders and decorations; the ribbons we observe most on the button holes, are rose, lilac, straw-color, lapis lazuli, and flesh color.

" The Grand Vista of the gardens of the Tuilleries is at length turned to useful account; gentlemen were observed yesterday manuring it for potatoes.

" THE COURTS.

" The judges came late; the prisoners and gendarmes being impatient had gone out to drink together in the neighboring cabarets. We should like to see the antiquated buffoonery of justice set aside; when there are no laws, there will be no crimes, and happily,—no prisons.

" VARIETIES.

" Thank Heaven, the stamp duties and the post-office tax are set aside. The country subscribers of the *Democratic Herald* are therefore requested to send for their papers. The office is in Paris, at No. 7, Rue de Grammont.

" Every citizen may strike his own coin, provided only that his effigy appear thereon.

" Mr. ***, and Mrs. ***, have taken possession of two of the ex-government telegraphs, with which they keep up their private correspondence.

" At the frost has just set in, we recommend to our subscribers the fine timbers of the gardens of the Tuilleries. It may be had by every free citizen at the expense of a good hatchet.

" RELIGION.

" Abbé Auzon has issued a proclamation for the general renunciation of—God.

" Abbé Hugo has issued a proclamation for the general renunciation of—Abbé Auzon.

" STOCK EXCHANGE.

" All dissimulation is now laid aside on change. Pocket-books, purses, and watches are freely stolen. Yesterday, towards the close, watches fetched a high premium: handkerchiefs on the other hand fell considerably below par,—pocket-books maintained their ground."

" So much for the organ of our new chartists.

" If I had a thousand crowns' more than I knew what to do with, I would offer them as a prize for the best treatise tending to determine the true reason why in all revolutionary movements there is a majority of tailors. I confess I cannot comprehend the interest tailors appear to take in measures that must render the whole community breeches-less!"

It is remarked in Germany, that at no period has there been so much emigration to the United States as at the present moment; entire caravans are constantly passing through the town of Mayence to reach Havre, overland, for the purpose of embarkation. The emigrants, many of whom are men of some property, generally average thirty years of age. On the 13th and 14th of March, as many as 600 took the direction above mentioned; besides a vast number before and since, during the present winter, arriving from various parts of Rhenish Prussia, and the small German States.

SCIENTIFIC MEETINGS IN LONDON,
FOR THE WEEK COMMENCING APRIL 6TH, 1840.

Monday.	Entomological Society.....	8	P. M.
	United Service Institution.....	9	P. M.
Tuesday.	Medical Society.....	8	P. M.
	Linnæan Society.....	8	P. M.
	Horticultural Society.....	3	P. M.
	Instit. of Civil Engineers.....	3	P. M.
	Electrical Society.....	8	P. M.
	Architectural Society.....	8	P. M.
Wednesday.	Society of Arts.....	7½	P. M.
	Geological Society.....	8	P. M.
	London Institution.....	7	P. M.
	Medico-Botanical Society.....	8	P. M.
	Graphic Society.....	8	P. M.
	Royal Society.....	8½	P. M.
	Royal Society of Antiquaries..	8	P. M.
	Royal Society of Literature..	4	P. M.
	Royal Astronomical Society..	8	P. M.
Friday.	Royal Institution.....	8½	P. M.
Saturday.	Westminster Medical Society..	8	P. M.
	Mathematical Society.....	8	P. M.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL SOCIETY.

April 2d. Marquis of Northampton, President, in the Chair.

His Grace the Duke of Richmond having been nominated at the former meeting, the Society immediately proceeded to ballot, and he was declared duly elected. J. Gwynn Jeffrys, Esq., of Swansea, was also elected. The following communications were read:—

1. Note on Dr. Faraday's previous memoirs "On the Source of Power of the Voltaic Pile," by the author, and read at his request.

2. Additional note to the 11th Series of Memoirs "On the Tides," by Prof. Whewell; being an Appendix to his eleventh Memoir made in 1827 and 1828.

3. On the Nervous System, by Sir Charles Bell. The author stated, that twenty years had elapsed since his first paper appeared, and thirty since he first paid attention to the subject. In 1821, the first paper was read before the society, in which he came to the conclusions, that the spinal chord was composed of anterior and posterior columns, and that the nerves proceeding by roots from the anterior, communicated motion; and those from the posterior, sensation. It was principally with a view to pathology, the author wished to direct the attention of the society on the present occasion. Cases were recorded, in which the power of motion had been suspended in the extremities from disease, but in which sensation was present; and although the posterior column has been found very much softened, sensibility was not interrupted. Upon tracing upwards the ninth, sixth, and third nerves, they are found to be distributed to muscles only, whilst the fifth pair of nerves is analogous in its functions to spinal nerves, possessing both motion and sensation, and having, like them, a double origin.

INSTITUTION OF CIVIL ENGINEERS.

March 31. Jas. Walker, Esq., President, in the chair.

The following gentlemen were elected:—As graduates, Messrs. J. F. Birch, Dudroch, W. Power, and H. Ronesley; and Mr. G. Thompson as an associate. Additional remarks were made by Mr. Hawkins on the pressure which tubes of annealed glass would sustain. Some observations were made on the advantages of a new kind of wood for sleepers of railways, belonging to the cedar tribe, imported from New Brunswick, a log of which was exhibited. From the statements adduced, it appears that the wood was exceedingly well calculated for those situations exposed to the variations of the weather, as, from

trials which had been made in exposed situations, alternately wet and dry, it appeared to be even as durable as the Pitch Pine. A letter was read from Mr. Petrey, in which he stated it would outlast any wood growing in New Brunswick. Mr. J. Ingram, in a letter, also bore further testimony as to its durability and non-liability to rot, remaining sound even at the part in contact with the air and earth. Mr. Hawkins said he had seen rails in New Brunswick, said to have lasted 100 years: the posts were made of red cedar, and the rails of white cedar. This wood readily splits, and is not much affected by ordinary heat, a property belonging to most of the cedars, and on this account is employed in the country where it is found for roofing. Several members commented on the importance of a cheap and durable wood for sleepers. A note was read on the use of mica as a substitute for glass in workshops and other places, setting the mica in light iron frames. The surface is likely to effloresce, owing to the fluate of lime which is more or less found in its composition, when it resembles ground glass. It is occasionally obtained in Russia, in masses of three feet, and may be split into plates of the 300th of an inch in thickness. In Pennsylvania and Russia it is employed as a substitute for glass in glazing. A communication was read on the "reclaiming of land," by building sea-walls, a practice formerly employed in Egypt, and more recently in Holland, Romney Marsh, &c. The land so reclaimed does not usually require agricultural aid. The author entered into various particulars connected with the construction of the walls, and expenses attendant on the same. The communication was accompanied by a series of drawings. Details of experimental trips on the Birmingham and Liverpool, and Birmingham and London railways, of a locomotive engine (the England), made by Mr. W. Norris, of Philadelphia, stated to possess higher power, and greater durability, were read from Capt. W. J. Moreson, accompanied with a drawing of the engine.

BOTANICAL SOCIETY OF LONDON.

March 20. Daniel Cooper, Esq., Curator, in the chair.

A paper was read by Dr. W. H. Willshire, "On the nature of some of the lowest organised Beings." The intention of the paper was to bring before the society, the views lately advanced by Ehrenberg in his great work, concerning the organisation and relative place in the scale of animated nature of many of the tribe *Bacillariae*, *Closterina*, and others. It was endeavored to be proved, that a great many members of the family *Bacillariae*, the genus *Closterium*, and several others, must be considered as of a vegetable nature, and not of an animal, as Ehrenberg supposes, and that it is a matter of some doubt how far the members ranking under his sub-division *Naviculae* may be considered as of an animal organisation either. It was shown by Dr. Willshire, that the phenomenon of self-division is not peculiar to the animal kingdom, but that it likewise occurs in that of the vegetable, that the whorled ramuli of *Chara* can increase both by transverse and longitudinal self-division, that the formation of spores in *Marchantia*, *Jungermannia* and some of the plants, takes place from self-division of the original cellule, and that the increase of *Conferva Glomerata*, &c., &c., is also known to ensue by the same means, and that therefore the mere fact of this mode of propagation in such structures as *Diatoma*, *Fragillaria*, *Desmidium*, and others, is not a sufficient proof of their animal condition. It was stated likewise that granular matter, seen within many of these lower beings, and which is regarded by Ehrenberg in many cases as the ova granules or eggs of these creatures, cannot be such, for according to other observers they become blue on the addition of the tincture of Iodine, a further proof of their vegetable nature, and a fact particularly noticed by Meyen in respect to *Euastrum* and *Closterium*. That the mere dissolution from some of these lower beings of moving sporules, or at least mobile portions capable of increase of form and size, is not a proof of the animal condition of the parent

bearing them, because from the observations of Vaucher, Lamoureux, Montaigne, and especially the younger Agardh, we may safely conclude that the sporules of a very great many *Alge*, when ripe, are endowed with the faculty of locomotion, and that this not only takes place when such portions become freed from the mother plant, but in some cases also whilst they are within the interior of the cellules: also, that the fact of locomotion is not a proof at this low extremity of the scale of animal conditions, as we know that it takes place in structures allowed by Ehrenberg himself to be of vegetable nature, such as the *Oscillatoriæ* and *Zygomas*, and that Ehrenberg's opinion that the motion seen taking place in *Oscillatoriæ* is caused by rapid growth of the filaments, formation of gemmae, and stimulus of light, is ably and sufficiently disproved by the experiments of Captain Caronichael; and also, that as we cannot in the present state of our knowledge say that the attainment of a particular result from the occurrence of motion, as more apparently ensues in the *Naviculae* than in the *Oscillatoriæ*, is indicative of animal conditions, because result or purpose attained is equally observable in the movements of *Zygoma*, or even in *Vallioria*, and the motion of many irritable stamens: it seems to be highly probable, that many of these almost invisible organisms hitherto freely yielded up by the botanist to the zoologist, must not lay too much stress upon their claims for such distinction, although they may not appear at once so decidedly vegetable as do *Diatoma*, *Fragillaria*, *Desmidium*, *Closterium*, and others.

The paper was concluded with some remarks on the genus *Navicula*. Specimens of *Fragillaria*, *Diatoma*, *Closterium*, *Navicula*, &c., were shown by Dr. Willshire under the microscope, and the paper was illustrated by various diagrams.

URANIAN SOCIETY.

March 23. W. H. White, Esq., Vice-President in the chair.

The anniversary of this society was held this day in commemoration of the birth of the illustrious Laplace. The business of the meeting consisted in receiving the report of last session, taking into consideration, and revising the laws of the society;—and electing officers for the ensuing session, of which the following was the result:—

President, vacant; Vice-Presidents, W. D. Saul, Esq., F.R.A.S. F.G.S., &c.; W. H. White, Esq. M.B.S., &c.; Treasurer, John Green, Esq., M.B.S., &c.; Secretary, J. M. Cavalier; Foreign Secretary, Henry Mark, Esq.; Other Members of the Council, Messrs. C. A. Bowdler, T. F. Jones, Lieut. Morison, R.N., John Reynolds, and G. Whipple.

Abstract of the Secretary's Report.—The commencement of the labors of the Uranian Society may be dated from the 6th of August last, although two previous meetings of the members had taken place; the first of these was called for settling preliminaries; the second for deciding upon matters for scientific investigation. The subjects agreed to as meriting the society's attention, were those which comprise the elements of astro-meteorology, these have been discussed *seriatim* (according to the syllabus published at the time) during the past session: the investigation thereof, however, has tended to give no decisive results—indeed the analysis employed, which has been purely meteorological, appears to have been anything but specific for obtaining the conclusions required, and it has proved a matter of insurmountable difficulty to devise any method that has the least semblance of success.

With respect to the membership, and general affairs of the society, the council have great pleasure in being enabled to state that they have met their sanguine expectations. The donations to the library of the society, have been considerable; to none of the donors are the thanks of the society so justly due, as to M. Quetelet, Director of the Observatory at Brussels, who has presented numerous works of a most valuable nature, upon important subjects of present and permanent interest.

The council, anxious that the attention of the mem-

bers should be judiciously directed, have selected a series of subjects for their investigation during the next session, matters which they deem of importance, and which they anticipate will be found replete with interest—they anxiously hope that such will ensure assiduous and unremitting exertions, being certain that united efforts alone, will add to the prosperity of the society.

The following are the subjects alluded to: all form branches of physical astronomy, for the preservation of which the society has been especially established:—

1. On motion considered as an attribute of matter.
2. On the earth considered as a celestial body.
3. On clouds in connection with electricity.
4. On the nebulous theory of Laplace.
5. On the obliquity of the ecliptic, and transition of the poles.
6. On electricity as connected with astronomical phenomena.
7. On the motion of the moon, and the curve formed by her heliocentric path in one synodical lunation.
8. On the physical constitution of comets.
9. On planetary influence.
10. On asteroids.
11. On solar-light.
12. On the zodiacal light, and aurora borealis.
13. Elogie on Laplace.

THE THEATRES.

"See that the players be well used."—*Hamlet*.

"Nothing extenuate, nor set down aught in malice."—*Othello*.

HER MAJESTY'S THEATRE.—M. Laporte—ever anxious to gratify the English public—produced another novelty on Saturday last, namely Bellini's opera, *Beatrice Di Tenda*, which has been laid aside for several years. As to the opera itself, it is rather a dull affair, and consequently experienced a cool reception; but we recommend all lovers of melody to see it, were it only to behold the divine PERSIANI in her new vein of inspiration. The plot is deeply tragic, but the incidents are perplexing,—and may be considered as a superficial production of the Italian muse. The four prominent characters in its action, are thus connected:—*Beatrice Di Tenda* (Madame PERSIANI), the widow of a hero, "d'un eroe la vedova," has married, and elevated to the ducal throne of Milan, *Philip Visconti* (Signor COLLETTI), who becomes a tyrant to her and her people. *Philip* wishes to rid himself of *Beatrice*, in order that he may raise to her place on the throne *Agnew Del Maino* (Mdlle. De VARY), for whom he entertains an unholy passion. *Agnew*, however, has given her heart to *Orombello* (Signor RICCIARDI), a gallant gentleman of the court; while *Orombello*, on his part, cultivates a most unfortunate flame for *Beatrice*. *Visconti* finds some plausible ground to charge the latter with infidelity to him, both as her husband and duke. *Agnew*, for vengeance sake, gives force to the accusation by producing certain petitions from the discontented Milanese, privately addressed to *Beatrice*, and of which she has obtained possession by breach of confidence. *Orombello* is the victim selected by the tyrant as the accomplice of *Beatrice*. Both are accused—both put to the torture. *Orombello*, in his agony, yields to the purport of his questioning, and pleads guilty for *Beatrice* and himself, to the extent required. When, however, again brought into court, he heroically retracts the weak avowal. *Beatrice* bears her trial of suffering with more firmness, and maintains her innocence. *Agnew* is overwhelmed with remorse, and *Visconti* is almost won to pity, when news of an insurrection is brought in. He at once signs the warrant of death, and the tragedy ends by the consignment of *Beatrice* to the care of the executioner, whose axe, it is supposed, has already deprived *Orombello* of his head. It is as well to mention that the operation of the torture, the

"Tratto tre volte in sere,
Tre volte in giu sospinto."

was not exhibited on the stage, but it would also be unjust to the genius of the operatic drama, in this instance, not to remark how well and touch-

ingly both *Orombello* and *Beatrice* sang after all their dislocations.

The music of this opera is not one of Bellini's best works. It contains, indeed, many passages, in which his fine feeling for melody and expression are effectively displayed, especially in the second act. But taking it from its opening to its close, it is greatly defective in the character of a sustained inspiration. The *Beatrice* of Madame PERSIANI was void of all pretension to the power of strong excited tragic action, but it was not the less touching for its delicate and sincere pathos. In the scene with *Visconti*, in the first act, that before the judges in the second, and the conclusion, where *Beatrice* forgives *Agnes*, and, with a gentle heroism, encounters her fate, her performance was in a very high degree successful. Madame PERSIANI's singing in this part was as pure, as distinguished by the nicest taste, and fresh, refined art, as any of her efforts with which we are more familiar. The air "Ma la sola," in act the first, and "Ah! se un urna," in the second, were the most remarkable of her non-concerted pieces. She was greatly applauded throughout her whole performance. The *Agness* of Madlle. de VARY was not calculated to excite much emotion in her auditory. In the second act, a rather brilliant and masterly composition of, we believe, Mercadante, was introduced by her and sung with a good deal of academic skill. Signor COLLETTI was a very effective representative of *Philip Visconti*. He looked the part fairly, and acted in it with much spirit. The air "Qui mi accolse," in the second act, was that portion of his singing in the piece which displayed to most advantage the rich quality of his voice, and the broad, fine style of giving melodious subjects, in which he is best distinguished. In the duet with Madame PERSIANI, "Spicato! Codardo!" and in the judgment scene of the second act, perhaps the best part of the opera, he was also very successful. This performance will sustain Signor COLLETTI in the favorable place he has already attained in the opinion of the frequenters of our Italian Opera. The *Orombello* of RICCIARDI was, if not brilliant, at least free from any obvious defects. The very sad and subdued manner in which he sang after having been racked, was most appropriate and not a little affecting. *La Tarentule* followed, and Fanny ELSKES, as usual, received the most unbounded applause.

A very fashionable, and crowded audience attended, amongst whom were the Queen and Prince Albert.

COVENT GARDEN.—Charles KEMBLE has appeared thrice this week, with undiminished effect. On Monday, in *Romeo and Juliet*, as *Mercutio*; on Wednesday, in *the Wonder*, as *Don Felix*; and last evening, as *Charles Surface*, in the *School for Scandal*. The last is, without dispute, the very best of Sheridan's plays. It affords a clever actor many a fine opportunity for the display of his abilities, and is, withal, so full of satire and racy wit, and addresses itself so forcibly to the feelings of the audience, that it must ever be popular. With Charles KEMBLE as *Charles Surface*, and FARREN as *Sir Peter Teazle*, one can readily make allowance for the minor characters not being quite what one could wish. The scene between *Sir Peter* and *Joseph Surface*, during the secretion of *Lady Teazle* behind the screen; and *Charles Surface*'s nonchalance in disposing of his family pictures, are the finest things we ever witnessed on the stage. This comedy might be repeated three times a week, if these two worthy veterans could be retained to act in concert. Mr. Charles MATTHEWS must never essay again the part of *Charles Surface*. Forbid it, shade of SHERIDAN!

HAYMARKET.—The revival of *Richelieu* on Wednesday, drew a fashionable and very crowded house. MACREADY and PHELPS sustained their original principal characters, of the *Cardinal* and *Father Joseph*; and with the happiest effect. We never saw two persons better fitted, and their having before appeared in the same parts, contributed greatly to the effect of their exertions on this occasion. The play was well got up, and for the most part

well performed. We did not, however, like either Mrs. YARNOLD nor Miss CHARLES. The first was quite unequal to sustain the character of *Julie de Mortemar*, and the second was too brazen even for the character of *Marian de Lorme*.

POWEA continues his glorious career, and has much to answer for in the damage done to the ribs of Her Majesty's subjects, which he continues to shake so heartily with fits of laughter, that illness is a necessary consequence. WEBSTER is going to work very spiritedly, and he lacks no encouragement on the part of the public.

OLYMPIC.—Mr. BUTLER deserves well of the playing public, for although certain pieces he has produced, draw good houses, he yet changes them so frequently, that there is the choicest variety of entertainment every evening; the performances being all concluded by eleven. Mrs. STRALING still takes the chair nightly at half-past seven, in the *Ladies' Club*, and makes one of the loveliest chair-women we ever had the good fortune to be acquainted with; for, in the general way, these individuals are quite out of our line. The *Gentleman in Black*, and the *Happiest Man Alive*, are more popular than ever.

NEW STRAND.—Mr. ANDERSON, the "Wizard," has so completely bewitched the good people of London, that he has been obliged to erect extra boxes for the accommodation of his visitors, whose attendance resembles a small army as they crowd the lobbies, anxious to be in time. This week, the entire performances have been changed, and such a variety of wonders have been introduced, as to puzzle the most knowing. The "gun trick" has been regularly performed, but we really hope that, for the future, it will be dispensed with, as "mischief might come of it." On Tuesday last, a brother Wizard, performing the 'gun-trick' at the *Queen's*, was severely wounded,—the villain who fired at him having slipped a quantity of shot into the barrel, unperceived by the audience. It was a heartless trick, for which the perpetrator ought to be severely punished.

ADRIALPHI.—Mr. YATES announces, for Easter Monday, a *spectacle* exceeding in splendor any thing ever attempted in this country. To give eclat to it, YATES, whose *penchant* for the sex called lovely, is too notorious for us to remark upon—has engaged EIGHTY additional LADIES, whose attractions, he tells us, "must be seen to be properly estimated." We can easily foresee that such an appeal will not be made in vain. The inhabitants of London are always on the look out for novelty; and such novelty as this, is not to be met with every day in the year.

PARIS.—The theatre of the *Porte St. Martin* drew a crowded audience last week, to witness the first representation of Balzac's Maiden Drama *Vautrin*. The name alone of its author was sufficient to attract the *elite* of Paris, whether of the literary world, or of people of fashion. It was expected that the drama would be of intense interest, something new, remarkable, unheard-of; a drama calculated to excite all Paris, or a drama destined to be damned in a most signal manner,—something, in short, so extraordinary, either in its success or in its failure, as to merit its being inscribed in the annals of the singular dramatic history of the period: nothing however of the kind took place. There was not even the gay, radiant, exciting immorality which some anticipated, escaping indignation by the vivacity of its allurements, the sprightliness of its repartees, the piquancy of its sarcasms; nor the immorality of Beaumarchais, the immorality of Sprigagni and Nerime, the immorality of La Saline and of Brigantin. The immorality of *Vautrin* is cold, calculating, and systematic. It is sententious to the last degree, sad, pallid, and diseased; there is nothing in it of the fire and vigor of youth, enviable even in its excesses, because it holds to principle; but, on the contrary, the cruel derision, the venomous irony of an old *blazé*, who silently undermines virtue, while apparently trifling with

social prepossessions. Nothing we have ever seen struck us as being altogether so chilling, so gloomy, as this miserable piece; and yet our affection for what is pre-eminently good, never inspired us with a hatred for what is solely beautiful. We know perfectly well that an indelicate statue may be a beautiful statue, that an immoral book may be beautifully written and reveal prodigious talent,—that although this never ought to be, it often is. A sublime intelligence has often abused its own powers and became a fallen star, grand even in its descent; and when we condemn, we may sometimes pity; where the interests of art is concerned we may sometimes relax a little in our scrupulousness for morality, without at all incurring public blame or self-condemnation. But here we see a fine intelligence debase itself and set morality at defiance, and in a man who should be able to appreciate the power and effects of contrast, we observe an enemy to social happiness, attempting to produce an unnatural interest in the most hateful beings of the community, and investing personages in high and responsible positions with criminal characters that would doubly degrade the most degraded. Balzac has certainly taken a most erroneous view of contrast, and through this he falls; his burglar is a delicate and honorable man; his statesman a fool and scoundrel; his ladies of high rank Billingsgates; his police officer a murderer; his young lover a forger; his princess a....whatever you may please to term her.

In this fatal drama, fatal to the character of a great writer, there is a severe lesson to the illustrious; their celebrity cannot carry them with impunity through the ordeal of a public assembly. The more a name promises great things, with the more difficulty are these promises kept. The exigencies of a public rise to the level of its hopes; how is it possible to satisfy the former, or avoid the latter? The crown that Balzac was on the point of reaching has escaped his grasp, it has fallen covered with filth; no one would wish to pick it up—not even, it is to be hoped—Balzac himself.

PARIS.—The theatre of the Renaissance gave the other evening its first representation of the *Fille du Cid*. The Cid dies after having repulsed the enemies of Castille. At this supreme moment, and in obedience to the order of his daughter, the body of the warrior is placed on a funeral bed, in order to be carried forward across the lines of the enemy. At the mournful rolling of the drums, the Castillians knights sink upon their knees with lowered lances. The curtain falls on this magnificent tableau, in which the whole *personnel* of the theatre are picturesquely grouped. The songs are by Casimir Delavigne. The piece was most favorably received by the audience, and we prognosticate for it a great success.

BRUSSELS.—The company who speculated on the Grand Opera, were last week made bankrupt. How this could have happened, it is very difficult to conceive. There must have been some egregious mis-management. The king with great liberality, has given 10,000 francs to assist the administration in their exigencies, and 63,000 francs were voted by the town council upon the security of the *materiel* of the theatre. In the mean time, the principal artists are playing nightly, in order to afford the inferior classes of actors means of paying off the debts they have incurred in the city, during the season, and which this catastrophe would have rendered them otherwise incapable of liquidating. The whole company are now playing with renewed vigor, and the house is nightly crowded.

Thalberg, the great pianist, has re-visited Brussels, and will shortly give a concert.

Demunk, the young, but celebrated violoncellist, gave a brilliant concert on the 21st ult., which was numerously attended; his style appears to gain greatly in effect, and he may be looked on as a decided rival of Servais.

We mentioned in our last week's number, the debut of an English pianist, Mr. Littolph; we spoke of the enthusiasm which his wonderful performance excited, and have been pleased to see the

encomiums bestowed upon it by the Brussels press during the whole of the past week. On the 26th ult., he gave a concert on his own account, which was extremely crowded; all the talent, beauty, and fashion of Brussels, appeared to vie in anxiety to see and applaud this talented young man. His reputation commenced but a short time since in Paris, it is confirmed in Belgium.

The Editor of the *Revue Musicale Belge* sensibly remarks, that "coming after so many great pianists who have very recently been heard in Brussels, the success of Mr. Littolph was prodigious. Under his fingers, the piano can scarcely be recognised: it is an orchestra; it is a flute, now pouring forth a volume of sounds which astonish, now breathing tenderness which captivates. In his wildest flights of imagination, he never passes the limits of his art; this strength of tone has nothing in it hard or abrupt; this exquisite delicacy is no unevenness; in the most delicate passages not a note is lost." From the same Journal we learn some interesting details of the career of this remarkable young man. Henry Littolph was born in London, on the 6th February, 1819. His father was a native of Alsace, his mother an English-woman. The youngest of 17 children, *all* artists, he commenced the study of the piano at 11 years of age, under the tuition of his father, (himself a performer on the violin), who kept the poor boy at the instrument 10 hours a day, and was not sparing of very rough correction. Being naturally of a weak constitution, his health suffered severely from this mistaken treatment, the effects of which are still too visible in a delicate and nervous frame. His family not having the means of procuring him a piano, he found employment in the workshops of piano-manufacturers. In one of those he had the good fortune to attract the attention of Moscheles, who took him under his care, and during three years, bestowed on him the most arduous instruction. At 14 years of age, Henry Littolph first performed in public, executing "Alexander's March" by Moscheles, the composer kindly lending the orchestra. At eighteen years of age he married, left London, and went to live at Melun, where he ardently studied for three years more. In January last, he went to Paris, where he performed repeatedly with great success, and earned for himself, at the age of twenty-one, a reputation, which few great players have obtained so early in life. Mr. Littolph gave a concert of his own at Brussels, on the 26th ult. which was very well attended. He is about to pay a rapid visit to some of the principal cities of Belgium, thence he will return to England.

ADVERTISEMENTS.

RAPER'S PATENT WATERPROOF PROCESS.—The Public are respectfully informed, that RAPER'S PATENT WATERPROOFING COMPANY are now prepared to execute orders, however extensive, for Waterproofing Woolen Cloths, and other Fabrics, by their highly esteemed process, at their Manufactories, 8, New Bridge-street, London; Oakland Mills, Leeds; and Parliament-street, Dublin; where may be seen testimonials from various public bodies and scientific gentlemen in favor of this process. A liberal commission allowed to the Trade. To prevent imposition, all cloths are stamped at intervals of every two yards with "Raper's Patent Waterproof." The Company also particularly recommend their Waterproof Paste for Harness, Boots, Shoes, &c., which will render them impervious to snow and rain.—8, Bridge-street, Blackfriars, London.

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THE SULPHUR QUESTION.

MESSINA, MARCH 19.—Some very unexpected intelligence has just reached us. Sicily is threatened with blockade on the part of England, and eight English men-of-war are said to be on their way for the island. However exaggerated the amount of this naval force, intended for a hostile demoralisation on the coast of the kingdom of the Two Sicilies, may be, the Neapolitan Government is actively employed in sending troops, with the evident intention of opposing the landing of the English. The arrival of the 10th regiment of the line is announced at Messina, and in order to hasten the movement of his military forces, the king has put under requisition all the steamers that he can dispose of. An order was given three days back to prevent the departure of the *Marie Christine*, and it was but at the earnest entreaties of the passengers that the ship obtained leave to make another trip to Marseilles.

This imminent aggression on the part of England against a friendly nation is caused by the King's refusal to break off the treaty which grants a monopoly of the sulphur of Sicily to the French company, Taix, Aycard, and Co.

Previous to giving any account of the circumstances which occasion this declaration on the part of the King, it is necessary to state the principal clauses of this famous sulphur contract, which has been incessantly attacked by England from the very first moment of its existence. Some development of a subject, which interests Sicily to such a point that its future prosperity or complete ruin may be said to depend on it, is here necessary.

On the 27th June, 1838, Ferdinand, on the advice of the minister, San Angelo, granted the privilege of the sale of sulphur to a company. At the same time an ordinance restricted the extraction of sulphur, which till then had been illimitated. To justify this measure, the exposition of the motives of the ordinance pretended that the quantity of the mineral extracted having yearly exceeded the demand by 300,000 cantaja (the cantaja is about 171 lbs.), such a reduction in the price of the article had ensued, that some possessors of sulphur mines preferred leaving them unworked, and many others were on the point of ruin. It was, therefore, to improve the value of sulphur, without giving access to ideas of privilege and monopoly, so says the exposition, that a contract was concluded between the King, acting in behalf of the Sicilian sulphur mine proprietors, and Messrs. Taix and Aycard.

The annual produce of sulphur is limited to 600,000 cantaja. The company undertakes to pur-

chase yearly that quantity at 25, 24, 23, 22, and 21 carlinos, according to quality. As it proved, so says the treaty, that Sicily, in preceding years, had extracted per annum, 900,000 cantaja of sulphur, the company will pay the proprietors a premium of 4 carlinos per cantaja for the surplus which is to remain in the mine. As soon as the produce of each sulphur mine fixed in the basis, which will be mentioned hereafter, was ready, the proprietors could consign one-half of the sulphur at which they were rated to the depôts, and exact immediate payment. The company was to purchase the other half the ensuing year, and pay the amount within a year.

Moreover, every proprietor offering good personal security, either by himself or others, has the right of anticipating yearly one-third of the value of the sulphur he has to supply. In short, the company is prohibited selling their sulphur under 45, 43, and 41 carlinos. The capital of the company is fixed at 1,200,000 ducats, 900,000 of which payable in the year. The 300,000 ducats remaining are divided into 1,000 shares of 300 ducats each, and bear 6 per cent. Should the amount of any of these shares not be paid, the company takes it upon itself. It also engages to pay a yearly tax of 400,000 ducats. The government enters into the contract for the sum of 600,000 ducats, thus making the capital 1,800,000 ducats. The proprietors may sell their sulphur to whom they please, but have in such a case to pay an indemnity of 20 carlinos per cantaja to the company.

To fix the amount produced by each mine, so as to form the sum of 900,000 cantaja, the proprietors were, in the first three months of the contract, to state the quantity of mineral they had extracted during 1834, 1835, 1836, and 1837. One-fourth of the entire produce of the four years, forms the annual quantity that the mine can supply; two-thirds of that amount, the quantity to be extracted; and the remaining third, the quantity remaining in the mine, and on which the proprietor receives a premium of four carlinos per cantaja. Three commissioners, appointed by the government, have to see that the clauses of the contract be properly executed. They are to have a key of the iron safe containing the cash of the company, are to act as intermediaries between foreign purchasers and the company, and are to regulate the difficulties that may arise between the company and the proprietors. The direction of the company is fixed at ten years, commencing from August 1, 1838.

The above is the substance of the contract which has excited so much animosity abroad, and even in Sicily. The immoral manner in which the contract was obtained, was the first thing that excited dis-

satisfaction. It is asserted that the corrupt ministers of the King of the Two Sicilies were gained over by a bribe of 100,000 ducats. It was also maintained that the right of property was violated, by obliging those extractors of sulphur to sell at a limited price a limited quantity of their produce to a single purchaser, and that the duty of 20 carlinos per cantaja sold to any other person than the company, was an absolute prohibition. Much blame was also attributed to the arbitrary limiting, without proper information, the sulphur to be extracted to 600,000 cantaja. Soon after, complaints were made respecting the non-execution of the contract; delays in payment, refusals to make the advances indispensable for certain proprietors, and to receive the sulphur into the depôts at the prices and conditions agreed upon.

It must also be acknowledged that the proprietors have not been exempt from all blame. As soon as they heard of the treaty in question, they hastened to extract and export enormous quantities of sulphur; so that the company, finding the market overstocked, could not find means to dispose of the quantity it was obliged to take, according to the stipulations of the contract. On the other hand, the greater part of the proprietors gave in exaggerated accounts of the produce of their mine during the four years, which were to serve as a basis for fixing the amount of sulphur each had to supply, and by so doing injured the other proprietors. Thus, the government supposed that Sicily produced but 900,000 cantaja, and made its calculation in consequence; but the accounts, more or less false, sent in to the government, rated the amount at 2,000,000 to 3,000,000, so that it became necessary to rate each proprietor in proportion to the amount declared, by deducting the quantity exceeding the 900,000 cantaja. This gave rise to many errors and acts of injustice, and consequently to much complaint.

But be this as it may, the most enlightened Sicilians, although strongly blaming the company, acknowledge that the contract of the 27th of June, 1838, executed sincerely on both parties, would be extremely advantageous to their country, and they support their opinion by the following data:—Before the treaty, sulphur was so low as 12, and even 11, carlinos per cantaja; now, as the expense of extracting the minerals amount to 10½ carlinos, the profit of the proprietor was not more than 2d. per cantaja, whereas, by the prices given by the company, the proprietors realised 5 carlinos, or ls. 8d. per cantaja.

However, the quantity of sulphur which had accumulated at the end of 1837, at Marseilles and Malta, being exhausted, and the company keeping up its prices, the English merchants got alarmed at

this state of things, and petitions were sent to Parliament, praying that it would interfere and put a stop to a monopoly which had caused the price of an article, indispensable to the English manufacture, to be doubled. These petitions were warmly supported by the tories. The ministry replied, on the faith of the despatch from the envoy at Naples, that it expected that the affair would shortly be concluded in a satisfactory manner.

The English cabinet had, in fact, a short time before, sent a very strong note on the subject to its diplomatic agent, who communicated it to M. Carrero, the minister of foreign affairs, by whom he was earnestly begged not to lay before the King a note couched in such offensive terms, and who promised that he would settle the question. The envoy, therefore, wrote him in that sense, and the English Government, in consequence, spoke in Parliament as if the matter was terminated. However, as no change took place, the English envoy sent a note to M. Carrero. No answer was given for twenty-five days, and the Minister then replied that the King had refused to break off a contract without an honorable and serious motive. However, the Attorney-General at Messina was charged to examine the treaty, to endeavor to find some flaw by which it might be annulled by law.

On learning Ferdinand's peremptory refusal, the English Cabinet enjoined him instantly to break off the contract, and to pay £1,000 damages per diem ever since the conclusion of the treaty, if he wished to avoid coercive measures. The English Government founds its pretensions on the treaty concluded in 1816, between Great Britain and the King of Naples, in which it is stated that in any thing connected with the mineralogical productions of Sicily, England shall be placed on the footing of the most favored nations; and infers that, as the monopoly of sulphur destroys that privilege, it must be done away with as a violation of an existing treaty.—*National.*

THE PENNY POST.

The returns relative to the working of the new postage scheme, which have been for some time expected, are now published, and we copy the results. The first returns are made to show the number of letters and the amount of postage received in the London district between the 6th December, 1838, and 10th January, 1839, between 11th January and 14th February, 1839, and the number of letters and the amount of postage received in the five weeks of 1839 and 1840 (corresponding to the first period) under the fourpenny postage rate, and received in the five weeks of 1840 (corresponding to the second period) under the penny rate.

Under the old rate, the number of letters received in five weeks, in the London district, was 923,917, including ship and foreign letters (rather more than one-fifth, and excluding all franks.) The amount of postage was £57,300. From this, however, must be deducted £3,637 paid for Government letters, making the revenue £53,663. Under the fourpenny rate, the number of letters was 1,328,993, and deducting £1,316 paid by the Government, the amount of revenue was £37,376. There was, therefore, under the fourpenny rate, an increase of 405,076 letters, or about forty-four per cent., and a decrease of revenue of £16,287, or about 35 per cent.

Under the old rate, taking another five weeks to correspond with five weeks in which the penny rate has been in operation, excluding franks, and including ship and foreign letters, the number of letters received in five weeks in the London district was 930,215, and the amount of revenue, deducting the sum paid by the Government Departments (£4,624), was £55,436. Under the penny rate the number of letters received was 2,286,385, and the amount of revenue, deducting the sum paid by the Government Offices (£88), was £39,688. The increase in the number of the letters, there-

fore, was 1,356,170, or nearly one and a half, and the decrease of the revenue was £15,768, or about 32 per cent. These are circumstances which, in the incompleteness of the new system, tell very much in its favor.

The great amount of Government correspondence which has paid at all times, such as that of the Customs and Excise departments, feels the advantage of the reduction in the rate, and is reduced from £4,624 to £88. It must, however, be noticed that the Government correspondence which was heretofore franked, and is now to be paid, accounts being kept at the Post office with the former franking departments, is not included in this return. Neither does the return take any notice of any increase in the expense of the Post office department, which must, we presume, have been considerable, to carry the new arrangements into effect.

There are also returns of the London district post, in which, as comparatively little reduction has been made, and in some cases, in fact, the rates of postage have been increased, there is no corresponding increase to that in the General Post department which we have above quoted. The returns from Ireland are confined to the amount of postage collected in the Dublin district in five weeks under the old rate, under the fourpenny and under the penny rates, which were respectively £6,850, £4,418, and £2,843. The returns from Scotland give a similar account of the postage collected in the Edinburgh district in five weeks under the three rates, which were respectively £4,416, £3,132, and £2,478, so that the increase of the number of letters must have been proportionately greater in Edinburgh than in Dublin, as the reduction of the postage is so much less. The number of letters for the Edinburgh district cannot be estimated; in the Dublin district they were respectively, under the three rates, 212,000, 280,000, and 444,316. We may infer from this, that the bulk of the Scotch are in a better condition to appreciate and profit by the reduction in the rates than the Irish, being a more business-like people, and education being more diffused amongst them.

The total number of letters delivered in the United Kingdom in the week ending the 24th of November, 1839, under the old rates, was 1,585,973, in the week ending the 22d of December, 1839, under the fourpenny rate, was 2,008,687; and in the week ending the 23d of February, 1840, 3,199,687. As might have been expected, the increase in the London district is much above the average increase in the whole empire. We consider the returns to be most satisfactory. The increase in the number of letters has, we believe, fully answered the expectations of the author of the change, while the reduction of the revenue has been less than he anticipated.

THE BRITISH ASSOCIATION.

The *Glasgow Herald* furnishes us with the subjoined intelligence relating to the approaching meeting of the British Association in that city; and it affords us pleasure to be able to confirm the statement that, if her health permits, it is the intention of the Marchioness of Breadalbane to attend on the occasion. The presence of a lady so accomplished and so estimable in every point of view would contribute much to give *éclat* to that assembly over which her noble husband has been elected to preside; and where the literature of Scotland is gathered together, a descendant of the house of Baillie must always be considered as one of its most becoming and appropriate ornaments.

"The preliminary arrangements for the meeting are now nearly completed; and in no city yet visited have the preparations been more complete. The zeal and business-habits of the gentlemen who form the various committees are a sufficient guarantee,

that what has been begun so well will be prosecuted with vigor, and prove creditable to the city. The Noble Marquis, the President, has been in correspondence with the Lord Provost, and, as an earnest, has ordered his name to be enrolled as a subscriber to the local fund, in the munificent sum of £400. The ladies of Glasgow and the neighborhood will be highly gratified by the fact that the Marchioness of Breadalbane intends accompanying the Marquis; and her ladyship's presence will highly contribute to the enlivening the time which can be spared from the graver scientific discussions, which constitute the primary object of the meetings. The Sectional Meetings can all be comfortably accommodated in the halls and class-rooms of the College. The Geological Section, being by far the most numerous, will hold its meetings in the Public Hall, which is capable of accommodating 1,400. The Mineral Museum now being formed for the special, though not exclusive, use of this section, will be exhibited in the Library Hall, which is close by the Common Hall. The New Theatre and the Royal Exchange have been secured for the evening meetings; in either of which places upwards of 3,000 can be comfortably accommodated. The Committee on Minerals found in the West of Scotland are engaged, in concurrence with a general and strong recommendation of the Association, in collecting documents and specimens, and constructing charts, &c., on a plan so comprehensive, that there is no reason to doubt their being able to exhibit in their museum a complete picture of the geological formation of this district. They include in their plan collections of simple minerals and the fossil flora; and of course the remarkable phenomena of Arran will occupy their especial attention. The Model Committee have appointed, after obtaining consent of the parties, corresponding members in forty-one cities or towns in the three kingdoms, and have received promise of highly interesting models of machines or works of art from most of these places. The Liverpool and the Irish Steam Packet Companies, as also the Great Canal Shipping Companies, have engaged to carry all models for the exhibition free of charge. Many of the mechanics and ingenious workmen in Glasgow and neighborhood are engaged in preparing models of unique machines and splendid works of art; we know, also, of at least one very curious model having been ordered from France. Altogether this exhibition of mechanics and the works of art, the first of the kind in Glasgow, we doubt not will be worthy of that city, the birth-place of so many improvements, and of the greatest of machines—the steam-engine. One old-fashioned engine, worthless in itself, but which, from association, must, without doubt, command universal attention, will be placed in a prominent situation in the room, viz., the original model of the steam-engine which the immortal Watt was repairing when the important discovery of the use of a separate condenser presented itself to his powerful and discriminating mind. Upwards of 150 eminent scientific foreigners have been invited to attend the meeting. Strangers from distant parts of Scotland, from England, and Ireland, will at least be as numerous in Glasgow as in other places. To prevent disappointment to all such, the Council have been under the necessity of limiting the number of members to be admitted from Glasgow, or within fifteen miles of it, to 1,400, and have fixed the period of application from all such, to be not later than 1st July next.

JAVA.—The trade of Java is now thrown open to the Belgians, who are admitted to the colony upon the footing of the most favored nations. In consequence of this measure, the disposition of the law of the 1st of July, 1834, commanding an extraordinary duty of 50 and of 70 per cent. to be levied upon woollen and cotton manufactures, introduced there by any nation not on friendly terms with Holland, will henceforth cease to be applied to this sort of merchandise coming from Belgium.

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK
ENDING APRIL 4, 1840.

ENGLAND.

Not a single patent has expired during this week.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO
THE WEEK ENDING APRIL 4, 1840.

(Continued from our last.)

ENGLAND.

WILLIAM HENRY BURKE, Shoreditch, Middlesex, improvements in the mode of constructing vessels for containing air, applicable to the purpose of raising sunken, or lifting floating bodies, under or in the water, April 3.—Heretofore, vessels for containing air, while under water, have been known to burst by the expansion of the air, as soon as the vessel comes to the surface of the water. By this improvement, a hole is made in the lower part of the airproof or waterproof material, whereby only a given quantity of air can be compressed in the receiver, and the superfluous air will be forced through the hole.

It is evident that the greater the depth of water, the greater will be the compression of air from the pump to the vessel or waterproof receiver; but on this receiver rising towards the surface, the weight of the water will gradually decrease, consequently the air must naturally expand, which might cause the vessel or receiver to burst, were it not for the hole at the bottom, which allows the air to pass off. The receiver will retain a sufficient quantity of air to keep the sunken body afloat.

JOHN CURTIN, Lady Pool-lane, Sparkbrook, Aston, Birmingham, certain improved combinations of metal, to be used for various purposes, April 3.—The first improvement is for combining copper, zinc, and lead, so as to produce a metal that shall be applicable to all the purposes for which brass is now used.

The relative quantities are 40 lbs. of copper, 40 lbs. of zinc, and 20 lbs. of lead. The lead is first killed in the following manner:—Put 56 lbs. of lead in a suitable receiver, with a fire under it, and which, when covered, has a tube to allow the fumes to pass off; add from 4 to 6 oz. of arsenic; then fill the receiver with sawdust, mixed with fine resin, in the proportion of 1 lb. of resin to 1 peck and a half of sawdust.

In order to ascertain the state of the lead, a small quantity may be drawn off from a cock below, and left to cool. Should the sample of lead retain any pliability, it must be returned to the receiver, and one pound of common salt must be added, which will complete the process, and the lead, being poured into moulds for cooling, will be perfectly brittle.

A relative quantity of copper is now added to the lead that has been killed, and while in a molten state, 4 to 6 lbs. of pounded calamine is added, in a raw state, to 100 lbs. of combination metal. The relative quantity of zinc is now mixed with the copper and lead, and the receiver is filled with coke dust, to complete the process of combining the metal.

There are other methods for combining more or less zinc or lead. The zinc increases the hardness of the metal, and the copper or lead softens it.

The last improvement is for combining iron with copper, zinc, and lead. About 12 lbs. of tin, scrap iron, or Cumberland ore, is melted with 36 lbs. of copper, to which are added from 8 to 12 oz. of metallic antimony.

ENTERED AT THE ROLLS CHAPEL OFFICE, UP TO
THE WEEK ENDING APRIL 4, 1840.

(Continued from page 195.)

ENGLAND.

ISAAC DODDS, of Masborough, and **WILLIAM OWEN**, of Rotherham, York, civil engineers, improvements applicable to railways, and in the construction and manufacture of wheels, engines, and machinery to be used thereon, part or parts of which are applicable to other engines, and which wheels, without a flange, are also applicable for use on turnpike roads, March 16.—The first improvement is in the construction of wheels for rail or other roads. The principal object is to make the wheels of wrought iron. There are several methods set forth, but the construction of one wheel will, no doubt, convey all the information that is required.

Bars of iron are rolled to form the felloes of the wheel, one side is smooth, and the other is indented to receive the turned end of the spokes which are made of wrought iron. These turned ends are riveted or bolted to the felloes, which, being brought to a circle, present the reverse ends of the spokes towards the centre, where a suitable mould is placed to receive the casting of metal, which is to retain the spokes, and form the stock of the wheel. Another method is to form the stock of wrought iron rings, heated and welded, or pressed together, so as to secure the spokes. The tire, if for railroads, is formed with flange, and is put over the iron felloes in a red hot state, which, when cold, will shrink, and hold them together.

Second improvement is for forming cranks, &c., of several layers of iron. The shape of a crank is stamped out of thick sheet iron, and several of these stamped forms are placed together, which, on being welded in a hot state, or otherwise riveted, will form a more perfect and solid piece of workmanship.

Third improvement is for connecting railway carriages by an apparatus that will immediately dis-unite the connection should any of the train get off the rail. The front connecting branch has a curved piece of metal placed across it, which, being turned to the left or right, will raise a lever that will bring a union socket to a position for disconnecting the branches, when either of the carriages, by accident, would leave the rail.

Fourth improvement is the construction of buffers. The bearings or abutments against which the spiral or helical springs press, are formed as steps.

A further improvement is to employ the helical springs as supporters for the body of the carriage. To prevent the lateral motion of the body of a carriage, the box, being attached to the axle, is made to slide laterally in the stock of the wheel. A spring presses against the end of the box and axle, so as to keep it in a steady position.

Fifth improvement is in the application of the expansion and reversing gear to the axle of the carriage. The eccentric disc is made to slide on two bevelled feathers, which are attached to the box of the wheel; by which means the expansion valve may be widened or diminished. The reversing action is in shape of a cylinder, working in the box of the wheel, and next to the axle; a slot or groove is formed on an inclination of coil, on the outer surface, into which a pin from the box fits and works. By means of a forked lever, the reversing action cylinder is moved laterally to and fro, which action causes the eccentric disc to move from one position to the other, and thereby reversing the action of the engine.

Sixth improvement is the application of shunts or switches for conducting the train of carriages from one rail to another. A lever with a ball at its end, when down, causes a rocking cradle to tilt on one side, so as to form a groove with the rail on the right side, whereby the flange of the wheels on the right side is retained, and the train of carriages is made to pass on the right rails. When the lever is raised, the rocking cradle rises on the left side, and forms a groove with the left side rail. There

are other modifications of this improvement for conducting the flange of the wheels through a formed groove.

Lastly, an improvement in the construction of a metallic piston, to prevent wear in the direct lines on the inside of the cylinder. There are four pieces of brass placed to form the round of the piston, the inner edges of which are cut obliquely with the base line. The angular parts, fitting as wedges, are pressed by springs, attached to the boss of the piston rod; whereby it may be observed, that there is no particular line of junction, as all the pressing parts have an oblique direction.

The improvement in steam engines is for working one pair of wheels by a large cylinder and piston, while the two fore wheels are worked by smaller cylinders at one and the same time, two connecting rods unite the pistons of the small cylinders to the outside cranks of the driving wheels, worked by the large cylinder.

WILLIAM HENRY HORNBY and **WILLIAM KENWORTHY**, of Blackburn, Lancaster, manufacturers, certain improvements in the machinery or apparatus for sizing, and otherwise preparing cotton, wool, and other warps for weaving, March 25.—As the warp unfolds from the several beams, it passes in divisions through the comb bar, which is allowed to vibrate or oscillate freely. The warp then passes through the heald, and down into a trough of sizeing liquor, where it is held by an adjustable tension lever. The warp again rises and passes between pressing rollers, and then again into a sizeing trough as before, from whence it rises, and passes edgewise, in form of a tape, between another comb bar that is placed immediately before the beam, that receives the warp in form of tape.

An improved self-acting marking apparatus is placed near this comb bar, for the purpose of coloring the sized warp.

THOMAS ROBINSON WILLIAMS, Cheapside, certain improvements in the manufacture of flexible fibrous substances or compositions, applicable to covering buildings, and other useful purposes, and also the machinery used therein, March 28.—The foundation tissue of this manufacture are the waste flax or tow of the linen spinning mills, or the hair from the tanners' yards. These materials are placed near a cylindrical wheel, about three feet long and three feet diameter, and which has about twelve thousand teeth projecting from its surface. A part of this wheel emerges from the upper side of a box or chamber, and with the velocity of its rotary motion it draws in by degrees the material; the heavy particles of which will fall to the bottom of the box or chamber, and the lighter particles will be driven by the wind, produced by the action of the cylinder, technically termed the devil's picker or willy, to the opposite end of the chamber, where a fine wire barrel is placed; so that one-half of its surface shall be presented to the interior of the chamber for the purpose of catching the lighter particles. This wire barrel rotates about once a minute, and two pressing rollers draw the light material from its surface to pass along a flat board, when rammers and beaters are worked up and down by a tappet wheel, which produces an action similar to the hand of a workman, over the whole surface of the tissue, or bat of material. Small holes are perforated in a part of the board, for the purpose of admitting steam to moisten the material, and at the end of the board is a small tank of bituminous substance in a liquid state, through which the bat of material passes, and then between two pressing rollers, near which are placed drying cylinders for completing the process.

ENTERED AT THE PETTY BAG OFFICE, UP TO THE WEEK
ENDING APRIL 4, 1840.

(Continued from page 135.)

ENGLAND.

HENRY CROSLY, Hooper-square, Leeman-street, City of London, an Improved Battery, or arrangement

of apparatus, for the manufacturing of sugar, March 6.—This improvement appears to be in the arrangement of the pans, one above the other; so that the juice of the cane passes to the different pans while in the progress of clearing, evaporating, and crystallising.

The juice of the sugar cane is pumped by a high pressure engine into the highest pan or vat, where coils of pipe, heated by the waste steam, are arranged at the bottom, for the purpose of heating and clearing the sugar.

The pan or pans below this, receive the juice for evaporating, before it enters into the next, which is called the striking teache or pan.

From this it passes into the crystallising pan, which is brought at bottom in shape of a cone, along the apex of which is fitted a scraper with a rod handle, for the purpose of drawing the sugar. All the pans are heated by coils of steam pipe, and are surrounded with brick material, so as to retain and economise the heat.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of May 16. Each party will receive, in addition, a *private communication* to the same effect.

James Murdoch, Great Cambridge-street, Hackney, May 7.

Thomas Yates, Bolton-le-Moor, Lancaster, May 7.

George Hanson, Huddersfield, York, May 7.

Thomas and John Whiteley, Stappleford, Nottingham, May 7.

John Thomas Laurente Lamy Godard, Christopher-street, Finsbury-square, May 7.

John Jones, Westfield-place, Sheffield, May 7.

Edmund Moody, Maiden Bradley, Wilts, May 7.

Thomas Edmondson, Clerk, Manchester, May 9.

FOREIGN PATENTS.—BELGIUM.

LIST OF PATENTS RECENTLY GRANTED BY THE BELGIAN GOVERNMENT.

(Continued from No. 35.)

Defienne, Jean Baptiste, of Brussels, Courte rue Neuve, No. 14, a patent of invention for 15 years, for a new system of tanning by pressure, March 15, 1840.

Ozil, N. A., of Brussels, rue de l'Empereur, No. 14, a patent of invention and improvement for 15 years, for a new system of tanning, and of extracting the tanning matter, by combined, reiterated, and incessant pressure in air-tight vessels, March 19, 1840.

Obert, of Ixelles, chaussée d'Etterbeek, No. 152, a patent of invention for 15 years, for a new apparatus for heating air before introducing it into fire-places, for the purpose of producing a greater intensity of heat, and of effecting a saving of fuel in the fire-places of locomotive engines, of steam-boilers, &c. &c., March 25, 1840.

Janmart, Richard, of Louvain, rue de Malines, No. 76, a patent of invention for 10 years, for heating stores with bellows (à soufflet), March 25, 1840.

Carez, of Ixelles, chaussée d'Ixelles, No. 57, a patent of improvement for 5 years, for additional improvements in the new system of lighting by reflectors, for which he obtained a patent Feb. 18, 1840, March 25, 1840.

Jasper, Theodore, of Mons, rue de Nimy, No. 58, a patent of invention for 15 years, for improvements in exhausting engines for the use of mines, March 30, 1840.

Delstonche, Philippe François Bernard, of Marbais, (Brabant), a patent of invention for 15 years, for three implements of husbandry: 1st, a root-cutter: 2d, a plough, for grubbing up untilled land; 3d, a machine for cleaning all kinds of corn and grain, March 30, 1840.

Letoret, Charles E. J., of Mons, a patent of invention for 10 years, for improvements in the construction of steam-boilers, which improvements are for effecting a saving of fuel, March 30, 1840.

Lardos, of Brussels, rue de la Madelaine, No. 38, a patent of importation for 5 years, for a chronological and genealogical billiard table, March 27, 1840.

FOREIGN PATENTS.—FRANCE.

A LIST OF PATENTS GRANTED BY THE FRENCH GOVERNMENT FROM OCT. 20, TO OCT. 30, 1838.

(Continued from No. 34.)

No. 59. Christofle, Charles, of Paris, rue Montmartre, No. 76, a second patent of improvement and of addition to the patent of invention and improvement for 10 years which he obtained July 25, 1837, for a new kind of metallic tissue, applicable to the manufacture and finishing of all sorts of jewellery, goldsmiths' work, and fancy work, &c. &c., Oct. 20, 1838.

60. Cohalion, Joseph, sen. and jun., of Paris, rue de la Montagne, Santa Geneviève, No. 65, a patent of invention and improvement for 5 years, for a new cap (bonnet calvisier) for bald persons, Oct. 20, 1838.

61. Eyquem, Pierre François, of Bordeaux, Place Picard, No. 1, a second patent of improvement and of addition to the patent of invention for 15 years which he obtained Oct. 25, 1837, for glass stoppers, and a process of corking with green and black glass, Oct. 20, 1838.

62. Hardelet, sen., François Pierre, of Paris, rue Notre Dame de Nazareth, No. 29, a patent of invention for 5 years, for a warming-pan, called "rechaud hydrophlogique," Oct. 20, 1838.

63. Klispis, François, of Paris, rue Sainte Croix de la Bretonnerie, No. 25, a patent of improvement and of addition to the patent of invention for 5 years which he obtained Oct. 16, 1837, for manufacturing a metallic bitumen, applicable to covering buildings, to roofing terraces, pavements, and coating walls, Oct. 20, 1838.

64. Longueville, Gustave Louis Philippe, of Paris, rue de Richelieu, No. 16, a patent of invention for 5 years, for a new cut of shirts, Oct. 20, 1838.

65. Manin, Luce, and Co., of Paris, rue Mauconseil, No. 4, a patent of invention for 5 years, for an apparatus with continuous jet, moveable piston, stone valves, which they call "néclysopompe," Oct. 20, 1838.

66. Renaud de Vilback, of Charenton le Pont, département de la Seine, a patent of invention for 10 years, for a means of passing without danger steep inclines on railroads, with or without stationary engines, Oct. 20, 1838.

67. Thebé, sen., and nephew, of Tarbes, a patent of invention and improvement for 10 years, for a machine which they call "sècheur coupeur à feu direct," for the purpose of drying and cutting paper produced from continuous machines, and for drying paper manufactured in ordinary tubes, Oct. 20, 1838.

68. Ballefin, Pierre, and Marsay, Pierre, of Paris, place du Palais Royal, No. 239, a patent of invention and improvement for 10 years, for a chronological and genealogical billiard-table, Oct. 23, 1838.

69. Barbier and Daubrée, of Paris, at Daubr's, rue des Poitevins, No. 12, a patent of invention for 15 years, for new means of working and applying caoutchouc, Oct. 23, 1838.

70. Baudouin, Brothers, represented at Paris by Charles Regnau, rue du Temple, No. 119, a patent of invention for 5 years, for processes for forming of silicious and bituminous substances, pavements, flooring slabs, bricks, &c. &c., Oct. 23, 1838.

71. Beaudineau, Charles, of Paris, rue Richelieu, No. 18, a patent of invention for 15 years, for a new mode of boots and shoes, Oct. 23, 1838.

72. Breton, father and son, of Grenoble, a patent of invention for 5 years, for a machine for cutting rags for paper-making, Oct. 23, 1838.

73. Cartier, François, of Marseilles, rue de l'Olivier, No. 48, a patent of invention and improvement for 15 years, for a new soap, Oct. 23, 1838.

74. Clement, Jean Leandre, represented at Paris by Félix Duchon, rue d'Enghien, No. 6, a patent of invention and importation, for 15 years, for a watch (montre à village), which he calls montre Clement, Oct. 23, 1838.

75. Crevel, Alexandre, of Neuilly-sur-Seine, rue de Filliers, No. 20, a patent of invention for 15 years, for twelve products for the purpose of washing and cleansing woven fabrics, linen, &c., Oct. 23, 1838.

76. Le Vicomte Desbassayns de Richemont, Eugène Panon, of Paris, rue du Faubourg Saint Honoré, No. 83, a third patent of improvement and of addition to the patent of invention for 15 years which he obtained April 14, for new processes for the purpose of using the flame produced by the combustion of certain gases, Oct. 23, 1838.

77. Dupuy de Grandpré, Pierre Edouard Adolphe, of Bordeaux, rue des Trois-Conils, a second patent of improvement and of addition to the patent of invention for 15 years which he obtained Sept. 9, 1837, for a new system of axles, pins, and axes, applicable to carts, carriages, &c., Oct. 23, 1838.

78. Grenier, Antoine, of Paris, rue de la Calandre, No. 54, a patent of invention and improvement for 10 years, for a paper-cutting machine, Oct. 23, 1838.

79. Japy, Brothers, of Beaucourt, represented at Paris by Monnin, rue du Temple, No. 102, a patent of improvement and of addition to the patent of invention for 15 years which they obtained March 1, 1836, for a machine for shaping and planing iron pans, Oct. 23, 1838.

80. Laury, Gabriel Jean Julien, of Paris, rue Tronchet, No. 13, a third patent of improvement and addition to the patent of invention for 15 years which he obtained Dec. 30, 1836, for new arrangements of chimneys and of stoves, or heating furnaces, applicable to all situations, Oct. 23, 1838.

81. Molinié, Louis, of Saint Pons, département de l'Hérault, a patent of improvement and of addition to the patent of invention for 15 years which he obtained August 17, 1837, for a mechanical regulator applicable to hydraulic and steam motive power, Oct. 23, 1838.

82. Montgolfier, of Paris, rue Feydeau, No. 7, a patent of invention for 5 years, for a composition of bitumen, called metallic asphalt, Oct. 23, 1838.

83. Pape, Henri, of Paris, rue des Bons Enfants, No. 19, fourth patent of improvement and of addition to the patent of invention and improvement for 15 years which he obtained August 23, 1837, for new metallic contrivances adapted to pianos, and arrangement of sounding boards, Oct. 23, 1838.

84. Pelletan, Pierre, of Paris, rue Saint Benoît, No. 32, a patent of invention and improvement for 15 years, for a rotary steam-engine, Oct. 23, 1838.

85. Philip, Thomas, of Tarascon, a patent of invention for 5 years, for a street pump, which he calls "pompe balustre," Oct. 23, 1838.

86. Prins, Pierre Joseph, of Paris, rue du Bac, No. 13 bis, a patent of invention and improvement

for 5 years, for a new mode of manufacturing umbrellas and parasols, Oct. 23, 1838.

87. Ricord, Alexandre, of Paris, rue de Seine, Saint Germain, No. 56, a patent of invention and improvement for 15 years, for an internally strengthened axle and wheel protectors, Oct. 23, 1838.

88. Quérus, Jacques Edmond, of la Guillotière, quartier des Rivières, arrondissement de Lyon, a patent of invention for 5 years, for a method of heightening the color of pipes (*coulter les pipes*) by a chemical process, Oct. 23, 1838.

89. Andriot, Toussaint Marie Paul, of Semortier, address at Paris, rue Marsollier, No. 13, a patent of improvement and addition to the patent of invention and improvement for 10 years which he obtained Nov. 9, 1836, for a new fastening applicable to all kinds of doors or windows, and which he calls "espagnole dauphine," Oct. 27, 1838.

90. Brunel, Thomas, of Saint Chamond, département de la Loire, a patent of improvement and addition to the patent of invention for 5 years which he obtained Feb. 7, 1838, for a machine adapted to the manufacture of objects of cutlery, Oct. 27, 1838.

91. Dumoulin, Mdlle. Sophie Jacques, of Paris, rue du Vingt-neuf Juillet, No. 5, a patent of invention for 5 years, for corsets without gussets, Oct. 27, 1838.

92. Emery, Gabriel, of Paris, rue de la Vieille Monnaie, No. 14, a patent of improvement and of addition to the patent of invention and improvement for 5 years which he obtained August 3, 1838, for new processes and apparatus for manufacturing beet-root sugar, Oct. 27, 1838.

93. Frèche, Armand Nicholas, of Paris, Quai de Valmy, No. 145, a patent of invention for 5 years, for a dry measure of capacity, Oct. 27, 1838.

94. Jarry, François Eugène, and Bouvard, Alexandre Paul Amédée, of Paris, rue Pavée Saint André des Arts, No. 1, a patent of invention for 15 years, for a nautical instrument, which they call "dronomètre, or loch hydraulique," for the purpose of measuring the speed of vessels, and the angle of their lee-way, Oct. 27, 1838.

95. Inge, Louis Marie Etienne, of Paris, rue de la Victoire, No. 12, a patent of invention and improvement for 5 years, for a new continuous distilling apparatus for rectifying and weighing alcohol by means of steam, Oct. 27, 1838.

96. Marion de la Brillantais, Louis Marie, of Paris, rue Bellesons, No. 35, a second patent of improvement and of addition to the patent of invention for 10 years which he obtained Sept. 23, 1837, for a new mode of making bread, Oct. 27, 1838.

97. Mouillé, Eugène, of Paris, rue d'Enfer, No. 78, a patent of invention and improvement for 5 years, for a new vertical piano, Oct. 27, 1838.

98. De Saint Etienne, Ambroise Honoré, of Paris, rue Royale, No. 16, au Marais, a patent of invention for 10 years, for a bituminous cement, applicable to flooring, paving, and all hydraulic purposes, Oct. 27, 1838.

99. Thévenin, François, of Lyons, place Colbert, No. 5, a patent of invention and improvement for 5 years, for a new machine for the purpose of working figures into woven fabrics, which machine he calls "machine brochuse," Oct. 27, 1838.

100. Bienbar, Louis, of Paris, rue de Bondy, No. 24, a patent of invention for 10 years, for a new locomotive engine, Oct. 30, 1838.

101. Davies, John, of Manchester, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of importation for 15 years, for improvements in machines or apparatus for warping the warp threads, Oct. 30, 1838.

102. Detrez, Charpentier, and Cabrillon, Pierre Jean, of Condé sur Marne, a patent of improvement for 5 years, for a machine for making veneerings of wood, Oct. 30, 1838.

103. Godefroy, Leen, of Suresnes, represented at

Paris, by Perpigna, rue de Choiseul, No. 2 ter, a patent of invention and improvement for 5 years, for a new "révise" for printing woollen muslins, and which is likewise applicable to other woven fabrics of wool, cotton, flax, and other similar substances, Oct. 30, 1838.

104. Gros, François, represented by Perpigna, at Paris, rue de Choiseul, No. 2 ter, a patent of invention and improvement for 5 years, for the application of hydrogen gas to domestic heating purposes, and for various apparatus for carrying out this application, Oct. 30, 1838.

105. Labarthe, Charles, of Paris, rue de la Michaudière, No. 4, a patent of invention for 15 years, for 1st, the discovery, in all kinds of bark, and in many land and marine plants, of a new substance, applicable in manufactures, and which he calls cortesine; 2dly, for the mode of treating these plants or bark, and of extracting from them the said substance; 3dly, for the application of cortesine in the manufacture of paper, felt, military hats, and of various fabrics, Oct. 30, 1838.

106. Maréchal (Jules) and Co., of Paris, rue de la Planché, No. 20 bis, a patent of invention and improvement for 15 years, for an additional means of retaining filtering substances in the interior of filters, Oct. 30, 1838.

107. Miles, Berry, of London, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of importation for 15 years, for an instrument which he calls Sherwood's magnetic geometer, for the purpose of determining, without the aid of celestial observations, the latitude and longitude of any place on land, and the situation of vessels at sea; as likewise the dip and variation of the magnetic needle, Oct. 30, 1838.

108. Milliant, of Saint Etienne, a patent of invention for 10 years, for applying colors of a fine dye to ribands in raw silk, satin, taffeta, or ribands in general, Oct. 30, 1838.

109. Morse, Samuel H. B., of the United States, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of invention and improvement for 15 years, for a system of telegraphing, founded on electro-magnetism, and which he calls "Morse's telegraphing," Oct. 30, 1838.

110. Routledge, Thomas, of London, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of importation and improvement for 15 years, for a process of manufacturing cement from gypsum, or sulphate of lime, or other calcareous substances, and for producing patterns or mosaics with cement so manufactured, and other cements or earthy substances, Oct. 30, 1838.

111. Pitout, Lucien, of Paris, represented by Poisson, rue Neuve de Nazareth, Nos. 28 and 30, a patent of invention for 5 years, for a machine for manufacturing flat iron into tubes, Oct. 30, 1838.

(To be Continued.)

N. B.—In the former list of these Patents, our Correspondent, in error, gave the date 1839, instead of 1838. As this might hereafter mislead, our readers are requested to make the correction with a pen at the earliest moment.

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.

The French Société d'Encouragement pour l'Industrie Nationale, has lately added to the 260,000frs. set apart for prizes, upon the solution of questions which have not yet been resolved, 53,500frs. for fifteen prizes, to be awarded as follows:—Improvement in photography, 20,000frs. in four prizes; panification of the fecula of potatoes, 6,000frs. in one prize; preservation and breeding of leeches, 4,500frs. in one prize; superior methods of em-

ploying alkalis or their substitutes in washing, 3,500frs. in three prizes; improvements in pottery, 13,000frs. in four prizes; plantations upon sloping lands, 4,500frs. in one prize: for a pamphlet upon the German Custom-houses, 2,000frs. in one prize. —Total, 53,500frs.

BELGIUM.

In the interest of the good understanding that existed between France and Belgium, as well also as in the interest of internal navigation, the French law of the 28th of April established a duty of one franc per hectolitre on the entry of coals by sea on French bottoms; while the duty on such entry by land from Basieux along the frontier, was only 30 centimes for the same measure.

In the interests of industry, and to satisfy the urgent demands of coast consumers of this fuel, different modifications were introduced into this arrangement. The duty on these importations by sea, from Dunkirk to the Olonne Sands, is reduced at present to 50 centimes per hectolitre, and to 30 centimes from the Olonne Sands to Bayonne, while the duty along the Franco-Belgian frontier has been reduced to 15 centimes.

If this question ought only to be examined in relation to manufacturing interests, the claims of the manufacturers of Rouen would be uncontested; but other interests should be equally taken into consideration, and account should be kept of the rank which these importations hold in the general commercial relations between Belgium and France. There always existed in France a differential duty for the protection of Belgian coal proprietors, but a proper compensation was found to exist in the immense extent of consumption in Belgium of French productions. With a population of only one-sixth that of England, Belgium consumes nearly the same amount of French produce. This is a circumstance that ought always to be strongly borne in mind in all relations between the two countries. Be it also remarked, that without contributing any advantage whatever to French industry, England has obtained, by little and little, modifications tending to increase considerably the sum of her exports to France; as a proof of this, while the importation of Belgian coal has remained stationary, the importation of English coal has literally decupled. In 1834, England imported into France 48,000 tons of coal; and, in 1839, 320,000 tons. Before the ordinances of 1835, Belgium alimented almost the entire of the coast of France washed by the Channel and the Atlantic, and supplied the Rouen market. Now, however, she is totally dispossessed of these *debouchées*.

These matters are now before the French ministry, and we doubt not the end of their discussion will be the throwing open entirely of the coal trade, or, at all events, the placing of Belgium upon an equal footing with her more powerful neighbors. Every exertion should be made to obtain this great result, or their is an end of international equity.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

MANCHESTER AND LEEDS RAILWAY.—We understand the directors of this company, accompanied by their engineers, Messrs. Stephenson and Gooch, proceeded, a few days since, along the line all the way to its junction with the North Midland, beyond Wakefield. They were closely occupied inspecting personally all the principal works. The fine weather of late has enabled the directors to push forward the works with increased energy, and great confidence is felt that the entire line will be opened during the present year.

LANCASTER AND PRESTON RAILWAY.—We understand that the Galgate embankment, which is generally considered the heaviest work on the line, is at

length finished. Mr. Locke, the engineer of the line, accompanied by the secretary and other gentlemen, made a progress throughout the line a day or two since, and expressed the pleasure they felt at finding the works in so forward a state. No doubt was expressed that the line would be opened for traffic early in the month of June, or indeed even earlier than that, if any special occasion existed for the acceleration. Contrary to general report, Mr. Locke found the works at the Preston terminus in a still more forward state than other parts of the line.—*Lancaster Guardian*.

BRISTOL AND EXETER RAILWAY.—A valued correspondent, in advertizing to what we said last week on the subject of the Bristol and Exeter Railway, and its completion throughout its entire length, wishes us to recall attention to the explanation given at the late half-yearly meeting with respect to arrears on calls. It was then stated that of the sum of £165,555, the total amount of arrears at the time when the accounts were made up, considerably more than half consisted of arrears on the two last calls, due in August and November, and that between the date up to which the act requires the accounts to be prepared, and the date of the meeting, (the 3rd instant,) from £30,000 to £40,000, of these arrears had been received. We understand that since then a still further reduction has been made. We are glad that it is so; for however dissatisfied a portion of the proprietors may be (and we do not say that they have not some cause,) the holding back payment of calls is by no means a course to be recommended. Active measures alone can do good where ground for complaint exists or is supposed to exist.—*Railway Times*.

NEWCASTLE AND CARLISLE RAILWAY.—The annual general meeting of the shareholders of this company was held at the Assembly Rooms, Newcastle, on Tuesday week, and was numerously attended. A dividend of £6, per £100 share, for the last year, was declared. The following is an extract from the Report of the Directors:—"During the last year, much has been effected towards the doubling of the whole line; and as soon as those portions which are nearly completed shall be opened, only seventeen miles will remain to be doubled. As a proof of the credit and solidity of the undertaking, the directors state that the company have been able to fulfil all their engagements during the late severe pressure on the money market, without forcing into the market the quarter shares remaining at their disposal, which must have been attended with a great sacrifice. A more favorable opportunity having now offered, those quarter shares have been brought forward for sale, at a reasonable premium, and have been accepted to a very considerable extent. It appeared by a statement made up from the weekly summaries of revenue, that, as compared with the previous year, the increase in receipts during the last year had been as follows:—Passengers, nearly 28; parcels, above 33; goods, 84½; coals, 27½; lime, 10; and stone, nearly 81 per cent.; and, in consequence, the actual receipt of the year 1839 amounted to £87,421 1s. 9d., being £26,165 9s. above the receipt of the previous year. And to show the further prosperity of the concern, it was added, that up to the 7th March in this year, the revenue had exceeded that of the same period in the year 1839, by 23 and one-third per cent."

RAILWAY TOWARDS THE NORTH.—It appears to be matter of certainty, from what took place at the recent annual general meeting of the North Midland Railway Company in London, that, before the close of the month of June next, there will be a continuous railway communication between the metropolis of the empire and the city of York, by means of the London and Birmingham, the Midland Counties, the North Midland, and the York and North Midland lines, and it is calculated that the whole distance between the two places, even by the proposed circuitous route, will be performed within the short space of ten hours. To say nothing of the great facilities to be afforded to travellers, it is manifest that this arrangement may be rendered conducive to the realisation of consider-

able advantages to the inhabitants of Newcastle and its immediate neighborhood, inasmuch as the London evening mail may, without difficulty, be delivered within twenty hours of its despatch; that is, at four o'clock in the afternoon, instead of, as at present, eight o'clock the next morning; and when that portion of the Great North of England Railway which extends from York to Darlington, is completed, (and it is gratifying to state that its works are in a very forward state, and will, in part, be rendered available during the present year,) the same mail will be brought to Newcastle several hours earlier—probably at about noon. In view of the further extension of the Great North of England Railway Company's line towards the Tyne, and it may be hoped that this loudly called for and most beneficial measure will not be much longer delayed, it is clear that ere long the London letters and papers, despatched from the General Post Office at eight o'clock in the evening, will be in the hands of the parties to whom they are addressed, in Newcastle, at an early hour the following morning.—*Newcastle Journal*.

GLASGOW, PAISLEY, AND GREENOCK RAILWAY.—Upwards of five weeks of uninterrupted fine weather have caused an extraordinary advance in every part of the works. The number and strength of the gangs have been increased, whilst, in most places, the operations are carried on by reliefs through the night. The permanent road is driven on briskly, and, from present appearances, we should expect to see nearly the whole of it completed in a couple of months. We have heard it stated that the 1st of June is named for opening the portions from Glasgow to Paisley, and from Greenock to Port Glasgow; and the intervening distance from Paisley to Port Glasgow may be expected to be ready in eight weeks after; indeed, with the exception of the tunnels and West Ferry embankment, these twelve miles will be out of hand at about the same time as the lengths above alluded to. We have thus reason to hope that by even the end of May, twenty-one out of twenty-two and a half miles will be finished. From the importance of the tunnels, we have made careful inquiries respecting them, and can state from authority that their progress is daily becoming more gratifying, and that there is every reason to hope for their completion in July. The various station buildings are in preparation, and most of the engines and carriages for the traffic are ready to be forwarded when required. Another locomotive has been set to work this week, and on reviewing the whole line, which we have done with attention, we can bear our testimony to the admirable arrangements and the untiring energy displayed by all connected with the work—qualities which were more than ordinarily required to redeem the delay caused by the inclemency of the last summer and autumn. We are fully alive to the inestimable benefits that will flow from this splendid work, and now that hope is rapidly giving place to possession, we view its progress with more than ordinary interest. We may assuredly expect that, in amount of traffic, no railway in the kingdom will exceed it, and the vigilance that has been exercised has prevented any extravagance of outlay in its construction. Thus, all the elements of success are secured, and a very short time will call them into action. The new bill is now, we observe, committed in the House of Commons. It embraces some most important and useful clauses, and in consequence of the proposed branch and ferry, which will add Dumbarton to the nest of towns already on the line, it is very popular. Various improvements and additions to the branches to the harbors, here and at Glasgow, are also included, and the bill involves all the additional powers usually applied for in supplementary bills for new works, except the raising of fresh capital. On this head, the directors have deviated from the established rule, and we do not apprehend that the omission will at all detract from its merits in the eyes of the proprietors.—*Greenock Advertiser*.

NORTH MIDLAND RAILWAY.—This great line will

be opened from Derby to Sheffield, 40 miles, in the first week in May. The celebrated station at Derby for the three companies, the North Midland, Midland Counties, Birmingham and Derby Junction,—which, it is said, will be one of the finest railway stations in the kingdom—is in a state of great forwardness.

GREAT WESTERN RAILWAY.—The Bristol directors have been taking measures which, it is hoped, will secure the opening of their division, and consequently of the entire line, in the summer of next year.

It is positively announced that the railroads from Paris to Corbeil, and from Paris to Versailles, by the left bank of the river, are to be opened to the public during the month of May.

SCIENTIFIC MEMORANDA, AND NOTES ON ART.

Aerostatic Society.—In our last number, we gave notice of the intended formation of this Society. The first meeting, which consisted of several men of acknowledged talent, took place on Tuesday at the Polytechnic Institution,—their deliberations, however, being strictly private, we refrain, for the present, from giving them publicity. Suffice it to say, that the subject of "Aerostation" is now under the test of rigid scientific scrutiny.—We trust the result will tend to the advancement of the art, and be productive of many useful discoveries.

Corpuscles of the Blood in Animals.—Mr. Gulliver, in a paper recently published in the London and Edinburgh Philosophical Magazine, on the size of the blood corpuscles, in the class Mammalia, gives the following as the average of the dimensions of the globules in the eight classes he has examined:—

Quadrumanæ (*Monkeys, &c.*) not very different to those of man; Chiroptera (*Bats*), 1-4300 of an inch in diameter; Ferae (*Cats, Lions, &c.*), from 1-5000 to 1-4000 ditto; Marsupialia (*Kangaroo*), from 1-4500 to 1-3500 ditto; Gliræ (*Rats*), from 1-4500 to 1-3200 ditto; Edentata (*Armadillos, &c.*), from 1-4000 to 1-3200 ditto; Pachidermata (*Elephant*), from 1-2700 ditto; Rhinoceros, from 1-4000 ditto; Ruminantia (*Cattle, &c.*), from 1-13000 ditto.

"On the Expansion of Arches," by G. Rennie, Esq. —The expansion of solids, which has excited the attention of mathematicians since the investigations of La Hire, in 1688, on a rod of iron, is of particular importance in the construction of bridges, the security of which may be affected by the dilatation and contraction consequent on changes of temperature. Periodical motions, referable only to changes of temperature, were observed by Vicat, in a stone bridge built over the *Dordogne*, at Souillac, and have frequently been noticed in structures of all kinds. The different expansibilities of stone and iron have been considered an objection to the use of cast-iron pillars, in connection with stone, to support the fronts of buildings; but the experiments of Mr. Adie, of Edinburgh, led him to the conclusion, that no danger is to be apprehended from a change of temperature affecting cast-iron and sandstone in any great degree, as their expansion, so far as regards buildings, may be considered the same. Arguments from this source were employed against the arches of Southwark Bridge, and the experiments set forth in this communication were undertaken with a view of ascertaining the effect of temperature on these arches. Three sets of experiments were made—the first in January, 1818, when the main ribs and diagonal braces rested on their centres, and before any of the spandrels and road-plates had been put upon them; the second, in August and September of the same year. The rise was measured by the insertion of small wedges, by which the rise was ascertained to about 1-40th of an inch. The most extensive set of experiments were made on the eastern arch. Great care was taken in

observing the thermometers, of which there were three; one in the open air, another among the ribs, and the third inserted in the iron of the rib. The result of nine experiments gave, as a mean, a rise of 1-40th of an inch for 1 deg. Fah. The effects of changes of temperature were also observed in the stone bridge over the Thames, at Staines; after the arches had obtained their full settlement, openings were observed in the joints of the parapets immediately over the springing of the arches, and a distortion, or sinking, of the upper curve of the parapets. A wedge was inserted into some of these openings, and the lowest point of its descent in the month of January marked. The same wedges were carefully inserted every week until May, when they would no longer enter, and the joints became firmly closed. At this period, however, the joints immediately over the crowns of the arches which had, during the winter, been quite close, were open. From these facts it followed, as a necessary consequence, that in winter the arch contracting descended, and the spandril joints opened; and in summer the arch expanding rose, and closed these joints, and opened those at the crowns. Thus the joints of the parapets, which were made of single slabs of granite for the whole height, became good indicators of the changes of temperature. It had also been observed in the Waterloo and other bridges, that joints made good in the winter with Roman cement were found crushed in summer. The details of these experiments, and of others, on the expansion of a large portion of the frieze plates, and the calculations to which they gave rise, occupy the principal portion of this communication.—*Athenaeum.*

A Paper has been read in the French *Academie des Sciences* on a gas discovered by M. Jules Seguin, which is perfectly free from any hydro-sulphurous element, and also from all carburet of sulphur, and is stated to be admirably adapted for the purpose of giving light. It is made of materials which are not only useless, but noxious, as dead horses, old leather, spoiled wood, &c., and is at the same time free from any offensive odor. One old horse will, it is computed, afford on an average 25,000 litres (about 1,525,701 cubic inches) of gas, besides sal ammoniac and animal black, and 32 litres per hour will keep a single jet burning. The invention seems to be regarded in France with a favorable eye, as leading alike to economy and the removal of a nuisance.

VARIETIES.

Beet-root Sugar in Austria.—According to a report of Count Mitrowky, Minister of the Home Department, on the development of various branches of national industry, the number of refineries of Beet-root Sugar in the Austrian states amounts to fifty-six, producing 650,000 tons of sugar; nearly a third of the entire consumption throughout the empire.

The Council of State at Berlin, has just ordered the construction of railroads at the expense of government throughout the entire kingdom. Eleven million crowns are to be set aside for this purpose from the public treasury. This is a proof, if one were wanting, that the Prussian government knows how to appreciate the advantages of a general peace, in order to turn them to account by the most important of all national improvements.

A Trait of Civic Munificence.—There resides at Versailles, a painter of considerable talent and of imperturbable good humor, named Bigan. In his private life, a number of instances of kindness and generosity have served to endear him to his friends; while in the studio of the artist, whether, like Bigan, he be of Versailles, or indeed, of any other town in France, Bigan's name is sure to rank among those of the best and most amiable painters of the day. Not very long since, he took it into his head to make a present of one of his best pictures to the town of Versailles. The picture

once presented, Bigan, of course, thought nothing more of the matter, but the town council considered it their duty to assemble for the express purpose of offering a testimony of gratitude to the painter for his very handsome gift. The discussion lasted long; the council finding it difficult to make a present of return appropriate to the occasion. When, one fine day, as was about to sit down to dinner, Bigan received from the town council a letter, containing the most high-flown eulogium of his talent, and the most unqualified expressions of their gratitude. Observing, however, a postscript, his eyes ran along it, when to his astonishment he read, that the generous town of Versailles offered him a free admission, on his demise, to the best spot in the new cemetery! The painter hastened to return his acknowledgments for the proffered gift of six feet of earth, wisely considering them as indispensable to a painter as to any other of his Majesty's liege subjects; but begged at the same time to communicate to the town his rigid determination to postpone as long he could the advantages his body, and more particularly his heirs-at-law, would derive from this unprecedented but noble civic favor.

While our celebrated aeronaut, Green, is endeavoring to discover in certain atmospheric conditions the means of directing balloons, the same question is occupying Italy. It is well known that a scientific congress met about the end of last year, at Pisa, composed of men of learning from all parts of the world. This congress created a considerable sensation throughout Italy; and it was remarked that there were representatives of all the Italian States but the Papal, owing to the dislike of the actual pope to meetings in which principles are discussed that lead to latitudinarianism. However, to return to the subject of balloons,—a Mr. Muzzi entered into a detail of a discovery he has recently made, and which, hitherto, has baffled the skill of every aeronaut—namely, directing a balloon through or across currents, against currents, and through the air while in a perfect state of calm. In this system, there is no necessity for any manual labor on the part of the aeronaut, unless he wishes to change entirely the direction he is taking, and then veering is effected in an instant; there are no oars, nor sails, nor wheels, nor gas, nor steam employed to produce this power. His experiments before the congress perfectly succeeded; it only remains to know whether the system will hold good when established on a large scale, when in short this curious apparatus will be made subservient to real aerostatic excursions.

Fire in a French Coal Mine.—“The coal mines in the Commanierie, in the Allier,” says a letter on the 17th instant, from Montluçon, “continue to burn with undiminished intensity, and if we could but forget that the flames have been for three successive days devouring immense riches, and that three hundred families may thereby be deprived for a long time of their means of subsistence, we should experience the utmost admiration at the magnificent spectacle we behold. Imagine a deep ravine, in the form of an inverted cone, the circumference of which is constantly enlarging. On approaching the scene, we find torrents of flames issuing with violence from 14 vast openings, formed at about 20 feet above the bottom of the ravine, forming entrances into the galleries which were at work. Frequently a dull crackling sound is heard. This is caused by an enormous block of coal, which detaches itself from the top or sides of a gallery, and falls in a burning state to the bottom of the ravine. A thick column of black dust then bursts forth, and reaching the opening of the galleries, the flames lay hold of it, and a body of serpentine fire is produced. Sixty feet higher up, on each side of the galleries, two shafts, which reach to the subterranean passages, send up dazzling columns of flame. Sometimes one goes out suddenly, and the other increases in violence. It would appear as if, arrested in its fury, the fire hesitates for an instant. A great roaring is now heard, and suddenly the flame breaks forth

again with such force as to create an idea that it is about to burst the whole of this burning mass, and cover the spectator with its ruins. Now cast your eyes around; it is midnight. Two thousand spectators are present; some grouped on the ridge opposite the ravine, others standing carefully aloof. Listen—no other noise is heard than the terrible voice of the fire, which roars in the entrails of the earth; or if some human voice is heard, it reaches the ear broken and interrupted, like that of a man who is being suffocated. There is something grand and sad, which elevates and oppresses at the same time. The magnificence of such scenes gives a sort of elevation to the mind, but it is also harrowed in the presence of such convulsions.” A letter of the 20th instant, represents that on the preceding day, the pillars left to support the galleries having been consumed, they had fallen in, and nothing remained but one immense gulf of glowing fire. The engineers give hope that they will now be able to extinguish the burning mass by turning into it the waters of a stream which runs at about two miles off. To accomplish this, innumerable workmen are employed night and day, but this will require a length of time, and in the meanwhile the damage, already incalculable, must be greatly increased.

British Museum.—Mr. John Edward Gray has been appointed keeper of the Zoological collection in the Museum, which office has recently become vacant by the resignation of Mr. J. G. Children, who has held the appointment for twenty-two years. Mr. Gray has held the office of Senior Assistant in the same department, for sixteen years.

Bridge Building.—The *Revue d'Architecture et de Travaux Publics* contains an account of a new system of bridge-building, invented by an architect of New York, Mr. Town—as exhibited in a bridge constructed over the James River, at Richmond, in Virginia. This system, stated to be “the most curious of all inventions which the art of carpentry owes to the Americans, who are in the first rank of its professors,” entirely differs from all previous practice in bridge-building, is applicable to arches of any span, and peculiarly useful in its adaptation on railroads. Mr. Town uses only planks, so thin as to be readily carried on a man's shoulder. No iron enters into the composition; the planks are united by rivets of wood. These bridges, it is said, will bear any amount or rapidity of traffic, are extremely economical in their construction, and so simple that a village carpenter might superintend their erection.—*Athenaeum.*

Sir James Anderson's Steam Carriage.—On Monday evening, the first of these carriages, building at Newcomenbridge Mills, was brought up from the works to be painted at Nottingham-street. The rise from the mill, we are informed, is 9 feet 6 inches in 68 feet, and it being considered imprudent to use steam power for such an ascent, a number of workmen attempted to draw it up, but were unable. The steam was then used, and the hill ascended, without the least difficulty, to the top of the bridge. The carriage immediately started down the strand, and turned directly into the house prepared for it, apparently under full command. We understand that as soon as painted and decorated, it will be publicly exhibited. The difficulty of steam carriages ascending steep hills, seems no longer to exist.

Lead Mines in Wales.—The vein recently discovered in the Stepper-stones Mountain is close to the surface, is three feet in width, and extends, as far as has yet been ascertained, to a depth of 76 feet, and probably much beyond that. Its length has not yet been discovered. The ore is undoubtedly rich in metal, yielding about 90 per cent. of lead.—*Gloucestershire Chronicle.*

Iron Ore.—Every day brings increased evidence to confirm the opinion that there is a ton of iron ore for every ton of coal in our region. The veins of both are found contiguous, and the ore can doubtless be furnished at an average price of two dollars and a half.—*American Miners' Journal,*

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

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"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsagents, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 8, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"Bristolensis."—We have returned the documents, per post, and hope they have been duly received. Many thanks for the loan. When shall we be favored with the promised "History?"

"James Morgan," Salford.—Six months only are allowed, but it will be prudent not to defer it longer than is absolutely necessary.

"W. Taylor, Glasgow."—You will find it in the 20th number of "The Inventors' Advocate."

"T. Jenkins," Bristol.—You are too late; you are now not looked upon as the Inventor. Any expense, therefore, in the matter, would be useless.

"Mr. Plunkus."—This unhappy gentleman has addressed to us an effusion that would do honor to any of the Ladies of Billinggate. All we need say of it is, that it is quite in keeping with his conduct throughout, and gives evidence that the writer should be handed over, without loss of time, to the safe custody of his friends. Poor fellow!

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSO CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, and receive the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES. (See ADVERTISEMENT on the last page of the present Number.)



THE
INVENTORS' ADVOCATE,
AND
JOURNAL OF INDUSTRY.

SATURDAY, APRIL 11, 1840.

THE supply of so essential an article of our daily food, as bread, is a matter of such deep moment, that in its consideration we might expect all selfish interests and party feeling to be abandoned, and that it would be regarded by all classes, and by every party, solely with a view to its bearings on the welfare of the nation, and the comfort of the people. This, however, is unfortunately not the case. Few subjects have excited more contention, or have set one class of the community more against another, than the question of the admission of foreign corn into competition with the corn grown in this country.

The manufacturing and the agricultural classes consider their interests to be directly at variance on this point, and so long as this feeling continues, it will be difficult to bring the question to a satisfactory adjustment. We believe the expectations of the one class, and the fears of the other, respecting the effects of the opening of the trade in corn, to be much greater than the fact would justify. In this, as in every other national question, the interests of all parts of the community are bound up together; and though the agriculturists and the manufacturers appear in the contending characters of sellers and buyers of food, they are so mutually interested in each other's welfare, that any measure which seriously injures the one, would react prejudicially, with nearly equal force, on the other. It is only by viewing the question of the corn laws in this light, taking into consideration the interests of all, that we can expect to arrive at anything like a sound conclusion.

If the question of a free trade in corn depended on abstract principle alone, it would be easily determined. That it is wrong to manufacture at home, an article which can be bought much cheaper abroad, is a well-established dogma of political economy. If in articles of luxury, this principle should be

adhered to, it is of infinitely more importance that it should be applied to the staple article of our daily food. The high price of corn in this country, again it is urged, raises the wages of labor above those in foreign states; —the dearness of labor necessarily tends to raise the cost price of our manufactures, and to exclude us from the foreign markets; and the result of this state of things is, that our artisans obtain dear food, our manufacturers dear labor, and that they are consequently undersold abroad, and are gradually losing their foreign customers. It is further urged against the restrictive system, that the corn-growing countries, which would be glad to purchase our manufactures if we would take their corn, are prevented from doing so, because they have nothing else to offer in exchange. This is the substance of the arguments which the manufacturers direct against the monopoly of the trade in corn possessed by the English agriculturists. These arguments must be admitted to hold good in the abstract, and they are only to be met by arguments of circumstance.

The agriculturists, however, allege, that if foreign corn be admitted to free competition with the corn grown in this country, nearly all the land would be thrown out of cultivation, that the landowners and farmers would be ruined, and that most of the agricultural laborers would be without work. That if the free supply of foreign corn were to reduce the price of bread, and increase the foreign demand for our manufactures, that advantage would be more than counterbalanced to the manufacturer by the loss of the home trade, and by the increase of poor's rates for the support of the families thrown out of employ; whilst to the artisan, the reduced price of bread would bring no relief, for cheap bread would inevitably be accompanied by a reduction of wages, more than commensurate with the cheapness of food, as the labor market would be overstocked, owing to the numbers of agricultural laborers out of work. It is further contended, on that side the question, that it would be highly impolitic, in a national point of view, to make this country dependent for a supply of its food on foreign states; which might, either in seasons of scarcity, or during time of war, withhold the supply, and reduce us to a state of starvation.

It appears, therefore, that the course to be pursued is beset with difficulty, and that the question cannot be so readily settled as at the first view of the anti-corn law arguments it might seem. Situated as this country is, bur-

thened with a debt, to pay the interest of which requires a revenue twice the amount of the ordinary yearly expenditure, it is impossible to view any subject affecting our commercial and internal policy merely in the abstract. We must take into consideration the manner in which all interests are likely to be affected, and so adjust the balance between them, that in legislating for one we do not injure the others, else the consequent reaction would effect greater injury on those we intended to benefit, than the evil we designed to remedy.

But admitting the arguments of the agriculturists to their full extent, granting the impolicy of making any sudden changes in the law that would diminish the value of land, and throw the laborers out of work, there is one material point which they omit in their consideration of the question, which is, that with the existing monopoly, the agriculturists cannot grow sufficient wheat to supply the consumption of the country, and that we at present depend upon foreign nations, in ordinary seasons, for a great part of the corn we consume. It is important, therefore, since we depend largely on the supply of foreign corn, that its introduction should be regulated upon a system that will best secure us a certain supply, and on conditions most beneficial to the country. The system of regulating the duties on the importation of corn by the average price of wheat in this country, was only intended to adjust the contending interests of the landowners and the manufacturing population, and had no consideration for the best means of providing for the constant deficiency of the home supply. In principle, therefore, that system is radically defective, and in practice it is notoriously bad. The uncertainty of the duties prevents the foreign agriculturist from growing corn for the supply of the English market; and when an unusual scarcity here reduces the duties on importation, and causes an increased demand, there is danger, as was last year the case in France, of the supply being refused. A fixed duty, sufficient, in the first instance, to afford protection to the English farmer adequate to the comparative disadvantages under which he labors, would ensure a regular supply of foreign corn, as the demand would then be comparatively steady.

The trade in corn, would in that case be beneficial instead of injurious to this country; an interchange of commodities would take place, instead of draining this country of its gold, thereby causing commercial embar-

rassments; and a certain considerable revenue would be derived from the duties on importation. The amount at which the duty should be fixed we will not now inquire—it is a matter of detail, to be determined on consideration of the circumstances in which the English agriculturists are placed. It would appear, however, from the result of the recent debate in the House of Commons on the Corn Laws, that the legislature is not yet prepared to enter into the question. The present system of corn averages, with all its defects in principle and in practice, must continue for some time longer.

IMPROVEMENTS IN MANUFACTURING SAILS AND CORDAGE.

Our attention has been directed to Mr. DONLAN's process of making sail cloth, cordage, &c., from home-grown and colonial hemp and flax, which promises to introduce an important improvement in those articles, and at the same time to promote the cultivation of hemp and flax extensively in this country. The invention consists of three distinct parts: 1st. In a new and improved machinery, whereby a larger quantity of fibre can be obtained from the raw material: 2d. In the preservation of the fibre by a peculiar chemical compound, rendering the fabric free from mildew and premature decay: and 3d. In the process of rendering cloths waterproof; the fabrics remaining uninjured, flexible, and unaffected by any variation of temperature to which they can be exposed in service. These advantages, each of which is of great importance, appear to be combined in Mr. DONLAN's process of manufacture in the most satisfactory manner. Cloths that have been manufactured and prepared according to the mode prescribed in the specification of his patent, have stood the most severe tests, without exhibiting any signs of decay, when other cloths, of the best kinds, made in the ordinary way, which were placed in similar circumstances, have been entirely rotted with mildew. It is unnecessary to point out to persons at all acquainted with shipping, the great importance of an invention that will preserve sail cloths and cordage from decay, but to the mere landsman it may be requisite to state, that in consequence of the tendency of hempen articles to heat and mildew, when kept in places exposed to moisture, it frequently happens that the cords break, and the sails are torn to shreds, when the safety of the ship and cargo, and the lives of all on board,

depend upon them. It is needless, perhaps, to say, that the hold of a ship, particularly of a ship in the mercantile navy, is about the worst place for storing any thing subject to mildew; consequently the destruction of property from this cause, independently of the more serious losses incidental to the defective condition of the sails and cordage, becomes an important consideration. It appears by the number of testimonials we have seen, from persons who have used the improved cloth, under circumstances the most adverse to its preservation, including those of several officers in the Royal Navy, that Mr. DONLAN's invention is perfectly successful in every respect. It is, indeed, seldom that we see an object desirable of attainment so satisfactorily accomplished.

The material used by Mr. DONLAN, in making the sail cloths submitted to trial, was the *Phormium Tenax*, or New Zealand flax, which is considered to be much superior to the Russian hemp. The demand for the article will consequently add considerably to the sources of wealth, and the employment of labor and capital in that improving and important colony. It is proposed, however, to use extensively the hemp and flax grown in this country, and to encourage the cultivation of that produce, which has hitherto been much neglected. The hemp of England is generally admitted to be of superior quality to that imported from Russia; but notwithstanding the bounties offered for its cultivation and the high protecting duty for many years imposed upon foreign hemp, the agriculturists have paid little attention to its culture. This neglect has partly arisen from the circumstance that hemp and flax, when permitted to arrive at maturity, exhaust the land more than any other crops; and owing to the protecting duty on home grown wheat being higher, the farmers have found it more to their advantage to cultivate the latter. For the improved process of manufacture, however, the hemp will be cut in a green state, and, consequently, that objection to its cultivation will be removed.

It is somewhat singular, that whilst the alarmists contemplate with dread the increasing naval force of Russia, they pay no attention to the fact, that we at present depend on that country almost entirely for the rigging of our navy. The agriculturists affirm, in arguing against the competition of foreign corn, that it would be impolitic and dangerous to depend on supplies from abroad of an article that might be imported from most quarters of the globe. In the article of hemp, however, which is principally supplied from one country, and

that country Russia, they seem to experience no apprehension of the kind, and a reduction of the duty on hemp, to a merely nominal amount, has been permitted, with scarcely any opposition. We rejoice at the introduction of any new manufacture, or the increased cultivation of any article that will afford additional employment to the laboring classes, and increase the national resources of this country; if, therefore, Mr. DONLAN's improvement in the manufacture of sails and cordage be the means of giving increased stimulus to the cultivation of hemp and flax, it may be hailed as a national benefit.

NEW INVENTIONS.

ROCHER'S DISTILLATORY COOKING APPARATUS.

The following letter was addressed to the inventor, by M. Simon, the captain of a three-masted vessel, immediately upon its return from the Island of Bourbon. Considering it probable that it may be read with great interest by those whom the invention concerns, we hasten to give it insertion in our paper; adding, moreover, certain observations of our own upon the facts therein contained.

"To Mons. Rocher, of Nantes,
Cordemais, 5th Feb. 1840.

SIR,—For three years past, I have regularly employed your cooking apparatus, which serves likewise for the distillation of sea-water, desirous of awaiting the result of this long period of experiment, before declaring in a positive manner my opinion of its utility.

I have now arrived at the firm conviction that it is totally free from any inconvenience; and that the incontestable advantages to be derived from it will be appreciated generally, and that, too, in a very short time, by the crews of all ships who make use of it abroad. During my last voyage to Bourbon without more attention or more fuel than are employed for an ordinary cooking apparatus, all the water made use of by my crew and passengers was the produce of this apparatus during the common daily process of cooking, and was in all respects greatly preferable to the water ordinarily found on board ships.

And another thing; in place of the casks of water I was formerly obliged to take out whenever we put off from land, I was enabled to stow on board various kinds of merchandise, which payed for freightage, so that I have the strongest reasons for saying how much the adoption of your apparatus will be beneficial to ship-owners.

I have the honor, sir, &c.,

J. SIMON."

The reports of the commissioners named by the Academy of Sciences, and by the Chamber of Commerce, of Nantes; those of the commissioners especially appointed for the purpose at Rochefort, and consisting of the most distinguished officers and engineers of the port—left no doubt whatever in the minds of any one as to the safety and advantages of the methods employed to render sea-water drinkable.

A discovery, vainly sought for hitherto, was brought forward; and, in consequence of its high importance, required passing through the most rigid tests and examinations before it could be confided in with safety; once admitted, it should be placed in the same rank as the grandest and most useful discoveries of the age. The Royal Navy after this, hastened to adopt it, and placed an apparatus on board the *Aube*, sloop of war, sailing to New Zealand, and others on various other vessels belonging to the state. But it was not enough for merchant vessels to be able to procure fresh water under every circumstance during a long voyage, it was required

to be proved that the employment of the distillatory cooking apparatus offered a notable economy over the expense of water taken out in casks. Experiments long continued have established the fact, and Mons. Rocher's apparatus should be recommended to all captains and ship-owners, whether of this or any other country.

This is not one of the many discoveries we hear of every day, which, before they have been proved to be advantageous or profitable, tempt men of capital to work them frequently to the utter discomfiture of shareholders; but a discovery of a very simple and important character, submitted to the most exact experiments and patient investigation, and found practically to answer all the ends proposed.

ECONOMY IN BRIDGE BUILDING.

Mons. Lebrun, architect at Montauban, has just taken out a patent of invention, in France, for a new system of arches, applicable to the construction of vaults in masonry, which offers a saving of 70 per cent. over the ordinary methods, by means of carpentry; while at the same time it affords a perfect resistance to the heaviest torrents and inundations, without opposing the slightest obstacle to the free navigation of rivers. This system of arches is admirably adapted for the employment of *Beton*, which it is now well known may be made artificially of sand or gravel, at a very trifling expense. Many Roman constructions, which time has left uninjured, and which excite our admiration, were it only in attesting the grandeur and magnificence of that ancient people, are formed entirely of *Beton*. In the Rue de la Harpe, at Paris, there is a fine relic of Roman architecture, known generally by the name of *Thermes de Julian*. There is a ceiling in these ancient baths, of about 20 feet square, consisting of one solid mass of *Beton*, a foot thick, and which is only sustained by its adhesion to the vertical walls of the apartment. This construction, discovered only by pure accident, in making some recent excavations, proves at once the immense cohesive force of this material, and its adaptation to every species of roofing.

The immense basins which form the reservoirs of the Rue de Racine have lately been roofed with this material, without the slightest apprehension being entertained of its failure.

In that part of the country which M. Lebrun inhabits, he has made use of *Beton* for some time past in various ways, whether for cellars, bridges, or the construction of houses, in all of which it is employed to the exclusion of every other material.

In the month of October last, M. Lebrun addressed a clever pamphlet to the Minister of Public Works, in which he proposed to make an essay of his system on the latent canal of the Garonne, in order to show the advantages of the arch for which he has taken out a patent of invention, and also of the *Beton*, of which he intends to construct, exclusively, the vault and buttments. The subject immediately engaged the serious attention of the Minister; and the Council General of Roads and Bridges was ordered to examine all the plans, and decide upon the merits of the proposition. The result has proved favorable to M. Lebrun's proposition, the Council having decided that such an essay ought at once to be carried into effect, under the personal direction of the architect. This bridge is to have a span between the buttments of 12 metres, or rather more than 39 feet English, the arch (elliptic) describing an arc of 60 degrees. This essay, on a grand scale, will prove how far the invention is likely to answer for bridges of that dimension, and will enable engineers to decide upon the question of their employment for the construction of others still more vast.

The system of M. Lebrun would be highly advantageous in railroad works, where bridges are required to be constructed every instant. There is nothing in the expenses of railroad lines which has so often misled and disappointed contractors, as these bridges, and therefore we think it right to call the attention of companies to this important matter.

IMPORTANT IMPROVEMENT IN CARTRIDGES.

We witnessed, a few days since, some very interesting experiments made in the shooting ground at Chalk Farm, with a new cartridge invented by Thomas Trench Berney, Esq., of Morton Hall, Norfolk, in the presence of a number of eminent sportsmen, gun-makers, &c. In this cartridge, for which a patent has been procured, the shot is enclosed in a spiral wire case, which is tapered towards the end, and provided with a cushion at bottom formed of wool, moss, tow, or any other soft elastic substance, to prevent by its elasticity the sudden explosion of the powder from breaking the case or jamming the shot. The case expands after its discharge from the gun, and according as the coils are more or less apart is the distance to which the bulk of the shot may be carried before escaping through the coils. Three experiments were first made with a common duck gun charged with No. 6 shot in the usual manner, and fired by Mr. Berney against a two feet six inch iron target, at forty yards distance. The average number of shot which hit the target was 126. Fifteen shots were then made with the same gun charged with the patent cartridge, at distances varying from forty to sixty yards, and the average number of shot carried home was 256, making a difference in favor of the patent cartridge of 130. It was also evident that the force with which the shot from the patent cartridge struck the iron target, far exceeded that fired in the ordinary way. Among the gentlemen on the ground was that distinguished sportsman and excellent judge of projectiles, Colonel Hawker, who declared emphatically that the performances of the cartridge were quite "wonderful." *Mechanics' Magazine*.

THE PHYSIognotype.

The invention of this machine, for taking most perfect casts of the living features, must create a total revolution in the art of re-producing human likenesses. By the common mode of taking a cast, the weight and constriction of the wet plaster, not only renders the process disagreeable, but imperfect, especially in representing the features; for the muscles of the face become rigid, and the physiognomical expression of a plaster mask is sullen and painful in consequence. These defects are entirely obviated by the new machine, which consists of a vertical disc, whose surface is composed of an almost innumerable quantity of very fine steel wires or blunt needles, as close together as the hairs of a brush, moving in two plates, perforated with a corresponding number of holes, with so much ease that the wires yield to the slightest pressure: into this surface the face is gently pushed, and by a most simple and ingenious contrivance the whole of the wires are in an instant fixed securely, their surface presenting a concave mould of the face. A cast is then taken in plaster, and as many copies produced as may be desired. So instantaneous is the operation, and so delicate the construction of the mechanism, that the face of a crying child is taken with all its muscular contortions; and were any person to keep open his eyes, the eyeball would not be injured. By this invention, posterity will in future be in possession of an accurate likeness of all great and eminent characters, for strange to say, one of the most extraordinary men nature ever produced has never been faithfully represented, although thousands of copies of his busts exist. There is not a true likeness of Napoleon Bonaparte.

FINE ARTS—PARIS.

THE EXHIBITION OF THE LOUVRE.

(Continued from our last.)

This school of imitation, of which M. Ingres is one of the most distinguished masters, has its disciples in France. One of these, M. Lehman, has sent into the exhibition a St. Catherine, a fine specimen

of modern spiritualism. Imagine a saint wrapped up in a winding sheet, and transported through the air by melancholy looking angels! and a terrestrial globe, represented by a sea surrounded by rocks! and for the coloring, an indigo sky, a green sea, red rocks, a grey saint, and rose-colored angels! The truth is, that at a short distance it resembles a painted glass window. If M. Lehman will paint the subjects of the great masters, let him at the same time endeavor to imitate their exquisite coloring; let him change his opacity for their transparency, his wan sickly countenances for their divine ones, beaming with light, warmth, and beauty.

A rather remarkable religious painting attracted the visitors in the square salon. It is *Christ giving up the Ghost*, by M. Gue. It is a large composition, where the painter has assembled a multitude on Mount Calvary. The sky is black with clouds; the lightning falls upon the temple, the sepulchres open, the affrighted crowds shiver in the darkness, while the body of Christ alone receives the full glare of a luminous ray. This picture, which contains a certain poetical grandeur, and a great talent in design, resembles too much John Martin's. Instead, however, of the rude daubs of figures of the foreground in Martin's pictures, the figures here are ably designed, and take part in the action, but here, as every where else, we see imitation taking place of invention.

Louis Boulanger, more generally known by the verses addressed to him by Victor Hugo, in many of his publications, is also a *peintre spiritueliste*, as the French designate this class. His *Trois Amours poétiques* are nothing more than three figures of inanimate women, triangularly disposed in a frame, which contain besides a few angels. This is called mystic painting; we presume it must be so, at all events it is a mystery to us.

We remarked also some religious pictures as curiously conceived and executed as many of the same kind we saw at the last exhibition, at Brussels and elsewhere. Among these are *Christ tempted by the Devil*, and *Christ taken up by the Devil to the Mount*.

Before quitting the poetic school of painting, we will just say a word or two on Cabat's landscapes. Here is another disciple of the genuine mystic school, but the mysticism of M. Cabat is by no means an affectation, for if report speaks true, he has lately become a Carthusian Friar; be it as it may he has not long quitted the world, for his picture, *The Samaritan*, bears the date of 1840. We speak of this landscape painter, because he has effected a sort of revolution in this style of art. To him is due the honor of restoring the poetic landscape, and dethroning the truly prosaic ones, by which we have been so long tyrannised over; he has evidently studied Poussin. Nature according to his system ought to concur to the expression of thought. We often meet in our excursions landscapes which inspire, even among the most indifferent, sentiments of admiration; we are literally entranced by the loveliness of nature. But how often are such scenes in non-accordance with the character of the drama represented on them; how many a frightful tragedy has taken place on spots teeming with beauty, life, and light; and how many an act of self-devotion, benevolence, and charity, in scenes of chilling horror!

In M. Cabat's first landscapes there was too deep a tinge of melancholy, he seemed unacquainted with the secret of light, one would suppose he had never witnessed nature in the triumphant splendor shed upon her by the sun. This in our eyes was so great a defect, that all the talent displayed by the painter failed to compensate for severe and sober coloring. How delighted should we have been at seeing but one ray of light gleaming through his magnificent and ample foliage, to relieve it of its melancholy gloom. But in his *Samaritan* this imperfection in his talent is less conspicuous. The sun has just set,—the site chosen by the painter is sombre and mysterious, as should be a place chosen by brigands to assail a traveller; but there is an exquisite and harmonious tinge of gold along the horizon, and the moon's pale crescent just appears in the deep blue of the sky. Thus the gloom of the landscape is relieved, while the site of the attack receives by the

very contrast a deeper shade of horror. The road where the good Samaritan meets with the wounded man winds along a declivity, so that the artist has been able to introduce the entire scene described by the evangelists. In the foreground are the two principal figures; the Levite has just passed by, and in the background, beyond a tree which hides the corner of the road, is seen a horseman dashing off at full gallop. This is the treacherous priest who is making his escape. Whether we consider this picture with respect to its general design, or to its more minute details, we are struck with its great beauties and its intrinsic merit; it is a style so telling, and one to which we are so much attached, that we were for a long time riveted to the spot. Although the absence of the sentiment of light appears inherent in the talent of M. Cabat, we would rather attribute it to his desire to form himself after the manner of Poussin. But the question is, whether we are able truly to appreciate the light of this admirable artist. We know that Poussin's pictures have been for years past darkened; whether this be owing to his having retouched them before the first coats were dry, or whether, as is generally supposed, he painted on a red ground, we cannot say. M. Cabat has certainly created a school; one of his most ardent imitators is M. Flandrin, but unfortunately this artist exaggerates the melancholy of his master; in this respect his *Landscape in the Campagna of Rome* is very remarkable, penitents devoted to the dead are searching for abandoned bodies to give them sepulture. A fellow in a blouse standing by our side turned round to us, and said, "N'est-ce pas, Monsieur, à porter le diable en terre?"

(To be Continued.)

LES QUEPES; PAR ALPHONSE KARR.

(Continued from our last.)

Five numbers of these inimitable satires have already appeared, and the sale of them, prodigious, throughout the whole of France, is not confined alone to that country. They have been pirated in Switzerland, in Germany, and in Belgium; at this moment, besides the newspapers which reprint them as they appear, there are three distinct editions for the amusement of the Belgian public, published within four and twenty hours after their appearance in Paris. Those of our readers who, perchance, have read the original work, may perhaps be astonished at first, at our flying from the third to the second volume; from the fifth to the first; and from the first again forwards to the fourth; but they will immediately perceive that there is no connexion between the various articles of which each number is made up, and that even the author himself flies backwards and forwards from one subject to another, with the lightness and frivolity of the terrible insect whom he for ever immortalises.

NEWSPAPERS.

"As nearly as I can recall the date, a revolution was effected in the month of July of the year 1830, to establish the liberty of the press, by that interesting portion of the community who are totally unable either to read or write. If despotism has its inconveniences, liberty also has its own; despotism is considered by him who exercises it, either a right or a power acquired by force, and is consequently odious; as a right, like every other right it has its limits, beyond which it would cease to exist; as a usurpation, there is one drop that cannot be allowed to fall into the cup lest it should overflow. But liberty being a virtue, indulges in the most ridiculous and often fatal excesses, which it mistakes for progress, and recognises no limits whatever. The government therefore considered it acted very wisely in putting some restrictions on the liberty of the press. The government was egregiously in error. The press, unfettered, served as a counterpoise to itself; each shade of party politics had its organ, each organ its own little knot of readers. The press fettered, by being obliged to furnish security, has absorbed into a few leading journals

these infinite shades of politics, giving them a positive color; it has therefore extended its privileges by affording an immense power to those, whose proprietors are able to comply with the conditions, through the increase of readers, brought about by such a concentration. These fiscal conditions have had the effect of withdrawing the public papers from the hands of intelligent writers, to throw them into the hands of monied speculators. Not a single man of literature, at present, possesses a newspaper; but to make up for it, the proprietorship of the organs of public opinion consists of hat-makers, apothecaries, notaries, grocers, boot-makers, pastry-cooks, mercers, butchers, barbers, tinkers, and other citizens of doubtful literary talent. These are men infinitely more difficult for a government to keep in order than novel writers or poets. They are men, who to-day will come forward with wealth to ransom a friendly government, who to-morrow are capable of upsetting it and taking its place. Literary men who preached so loud in favor of progress and of their own independence, must certainly have profited by the change. They are no longer in the pay of a Louis XIV. They throw their heads up in proud contempt, and pity or despise Corneille, who submitted to this odious yoke; but they jingle in their pockets the five franc pieces of Mons. Trois Etoiles, the green-grocer, and the gentlemen of questionable literature just mentioned, and appear happy.

"There are only two sorts of journals, those which admire and support every act of the government, and those which blame and attack every act of the government; let the government therefore put into force two contradictory measures, which is neither impossible nor rare: it is evident that if the first is good, the second must be bad; or if the second is good, the first must be bad. Now in such a dilemma there is not a single paper in France which can open the eyes of the government to its error. The opposition papers are as obstinate and servile in their criticism, as the ministerial papers are in their enthusiasm. Besides the impossibility of finding out the truth on either side, as relates to the questions examined by these two parties, a man of sound sense and probity sees that there is another inconvenience which must prevent him from attaching himself to either, namely:

"That in the government party there are a few men at the head, who are men of real science and just discernment, men of experience and of good society; while the rest, who form the tail, are mendicants, vampires, and toadies, of the very vilest description. And that in the opposition party there are but an equally few men of worth, men of resolution and devotion, of severe probity and pure conscience; while the tail is made up of pot-house orators, brawlers, and disreputable scoundrels of every order and degree. Alas! both parties find it difficult to get along with these monstrous tails.

"The strangest folly in France is, that every man desires to be—the government. Each individual believes himself capable of fulfilling the duties of the seven ministers; it is a madness so common that it excites no attention. Yet how perfectly ridiculous would the inhabitants of any particular town appear, if they all took it into their heads to become bootmakers! It is less difficult, however, to make boots, than to govern states.

"There is a part of the populace who are able now a-days to read, and this they name emancipation. Hitherto the sheets of printed paper put into their hands, have made them greater dupes and greater slaves. I discover with real grief, that the portion of the populace which has received instruction (it is called instruction, and seriously meant), is a more consummate ass than the portion left in ignorance. From the disorders which ensue from it, as fatal in their results as they are ridiculous in their cause, I do not perceive that there has been the smallest change in the people from the time of Moses.

* * * * *

"The French Gendarmerie received Don Carlos with touching hospitality. They begged him to choose his residence, and assured him that the government would comply with his wishes, provided

his choice fell on Bourges. At Bourges there is a very melancholy souvenir for a dethroned monarch. Four hundred years ago Charles the Seventh ordered a pair of boots, but not having the money to pay for them, the maker indignantly refused credit, and took them away. Either Don Carlos is a prince and a gentleman, and should be allowed his liberty in France on parole, or he is a vagabond, to be punished by detention in a common house of correction. Why does not Don Carlos claim the support of the French laws according to the articles 114, 115, 116, 117, 341, 342, of the penal code? The condemnation of the ministers would not be so unfair, if justice were administered, as the condemnation of that unfortunate prince to the prison walls of the town of Bourges.

"While Don Carlos is languishing in France, the Queen of Spain is distributing titles and compenses to faithful generals. She is evidently imitating Napoleon. But the emperor gave his generals states, with the titles proper to such states. The Queen of Spain confers only metaphysical titles; she has named Espartero Duke of Victory. These duchies are very easy to create. We heard, the other day, of an officer being named Count of Sobriety; Maroto, it is said, has just received the title of Marquis of Treason. * * * * * It was formerly understood, that kings, queens, and princes were to immolate to their grandeur the sweetest sentiments of life. Love was never consulted in their marriages. It was over the hearts of simple burghesses alone that this god exercised his empire. Shopkeepers having now succeeded to this grandeur, Kings no longer immolate to grandeur, which has fled from courts.

"The Emperor of Russia, not many months ago, sent his son to seek among the petty German princes a wife after his own heart. The prince found at the court of Darmstadt, according to the paragraph of the papers "a young girl of the name of Mary, whom the high nobility disdained; she had only her fifteen summers and her beauty; the marriage will be celebrated in a month." A shopkeeper's son, of the Rue St. Denis, would be very coolly received by his father if, after a journey, he returned with a young woman fit only now-a-days for an Emperor of Russia or a King of France. With the domestic virtues of kings is coupled, in the present times, a perfect nullity in state affairs. Each country of Europe as soon as a king dies should get him canonised and stuffed. The academy has a perpetual secretary, why should not a nation have a perpetual king?

"In the legitimist and independent journals we observed the other day, that a wagon, with the royal arms, was seen at the Marché St. Joseph, with vegetables from the royal gardens. Tradesmen have made themselves monarchs, why should not monarchs become tradesmen? it is in the order of things. All this brings to our mind the first line of a very pretty nursery-book. 'Kings have been known to espouse a gentle shepherdess.' It remains to be seen whether, in a few years, a shepherdess will condescend to espouse a king. * * * * *

"I respect the institution of juries, as I respect all institutions; but I cannot forbear making a little mathematical calculation upon the chances of their efficacy.

"Tacitus has said, Cicero has also said, and I believe every one else down to our own times, that truth has but one form,—falsehood a thousand. Place a single judge, a cadi, on the bench, and give him a cause to decide; if the cause be ever so slightly intricate, there will be, at least, a dozen ways of judging the question; of these twelve methods one only can be right. This is unfortunate enough for the accused, who sees his life brought to depend upon a game in which there are eleven chances against him, and only one for him. Taking therefore for a basis, one chance for truth, and eleven for error, in every single judge; in a jury of twelve men there will be eleven chances in favor of the accused, and one hundred and thirty against him! At the commencement of every session the jury is composed of two classes. The first, of men who come with the intention of never con-

demning. The second, who arrive with the firm resolution of condemning on all occasions.

"I heard Mons. Lafitte once say, that he heard a jurymen deliver himself of the following humane and logical declaration. 'Between ourselves, they don't place a man for nothing in the dock between two gendarmes; it is not you, or me, or any other honest man, they place in that position. This man has done something; if it is not the crime of which he is accused, it is some other; therefore I feel bound to condemn.' Your jurymen, who never find it in their heart to condemn, always admit attenuating circumstances. We have seen a man accused of having cut his sister into pieces, declared guilty, but with attenuating circumstances. Where in the name of Nemesis, were the attenuating circumstances? Was it because the victim was his sister, or was it because the pieces were small? Examples of this kind, which I could multiply to infinity, little argue in favor of the extension of elective franchise, less still in favor of universal suffrage. I have a curious and singular remark to make apropos to juries, and have no intention to keep it any longer to myself. Every thing is in the hands of shopkeepers,—royalty, the press, place, honors, &c., &c. Justice itself has been unable to escape them; it has been forced to see things in their point of view. According to the opinions of jurisconsults and moralists of every age and every country, the crime the most deserving of punishment is murder. Theft takes but a third or fourth rate position in the scale of criminality. Since the institution of juries this order has been changed; the crime the most frightful, the most revolting, the most inexorably punished is theft. Murder comes after it, in rank: that is to say, murder committed by hatred or revenge; the murder which follows a robbery is as severely punished as a simple theft. For example, two men are animated with mutual hatred; one of these has offended the other, &c. The offender or the offended stabs his enemy; this is not precisely, think the jury, conformable to justice, morality, or the usages of social life; but, in point of fact, it does not concern us individually. This is a remark I once heard a jurymen make, who no doubt believed, and had reason to believe, that he represented the feelings of compeers. It was relative to an affair between a murdered man and the murderer. The culprit slew a fellow-being, because the latter had done him some injury; he is dead, and can injure him no more. Society is not injured by the circumstance. Society, be it clearly understood, in the mouth of a jurymen, signifies simply I. Soicsty is, or is not, means I am, or am not. But a merchant, a licensed dealer, a perfumer (like myself), has been robbed in an unfrquented street (like mine); the robber did not exactly wish any harm to the perfumer, he merely wished his money. His crime was not satisfied by the spoils; on the contrary, the cause has not ceased to exist, as in the instance above cited. Society has (I have) wealth; ergo, society is (I am) menaced; the villain must pay the severest penalty of the law. This is not a paradox; facts are there to substantiate it; let every man judge of it abstractedly, and draw from it his own conclusions.

"The gods depart," said one of the ancients. I shall say something still more sorrowful, but no less true: women depart.

"If there was ever a beautiful, a noble destiny, it was that of women, such as it was for so many centuries in France. They were looked upon as queens of love and beauty, they were placed upon so lofty a pedestal that the least divine among them dared not to descend from their exalted state.

"A grand and sublime fiction had established, that the love of a women could only be obtained by the manifestation of all that was noble and heroic in human nature. In order to possess them, distinction and elegance were required to be united to courage, wit, and honor. Men had raised women to such a state of grandeur, that it was necessary to become grand only to approach them. All this has been changed by men of vulgar minds.

"The taste for pleasures of easy acquirement necessarily became predominant at a period charac-

terised by an insatiable hatred of every thing grand and beautiful. Men of the noblest families, men the most calculated to adorn society, have been gradually drawn into the vortex of impure pleasures. Even in later times they had dancers, now they are had by them. They have burnt at the feet of these impure divinities an incense, to which they were not accustomed. Newspaper editors have vaunted the delicacy, the nobility of soul, the virtues, the refined manners of dancing women, who show themselves thrice a week nearly naked to the public; women who can have only meretricious charms, and to whom delicacy, virtue, and refined manners must of necessity be utter strangers. Offer to a great poet, or a king, the twentieth part of the eulogies offered every day by editors to yellow, shrivelled, opera mountebanks, and you will be immediately accused of *camaraderie* of servility; perhaps at nightfall the mob will break your windows.

"If in these contemptible times a *danseuse* marries a duke, it is called, as it was called in former times, a disparaging match; only the disparagement is on the part of the *danseuse* instead of the duke. When the nuptials take place the public flock to the church, and whisper the idea of her marrying an insignificant duke! She must be mad! However, the poor husband will be in the back ground; that's one comfort! A cantatrice is more applauded than a grand maestro, whose music she spoils.

"If learned and laborious author write a great work of merit, it is with the utmost difficulty he can get permission, in the interest of its sale, to dedicate it to the king. If an opera dancer, bare from below, upwards to the point at which other women are bare from above downwards, make three fine perouettes before majesty, she is instantly invited into the royal box, and receives not money, but a souvenir. The Queen of England detaches a bracelet from her arm, and implores the *danseuse* to accept it. The women in Paris of the nineteenth century who are the most successful, who are the most surrounded by distinguished *beaux*, are the equestrian ladies of the circus.

"Houp-là, houp, dia, hu, ho; houp-là, houp!"

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING APRIL 13TH, 1840.

Monday.	Royal Geographical Society...9 P. M.
	British Architects.....8 P. M.
Tuesday.	Medical Society.....8 P. M.
	Royal Medical and Chirurgical Society.....8½ P. M.
	Instit. of Civil Engineers....8 P. M.
	Society of Arts (illust.)....8 P. M.
	Zoological Society.....8½ P. M.
	Meteorological Society.....8 P. M.
Wednesday.	Society of Arts.....7½ P. M.
Saturday.	Westminster Medical Society..8 P. M.
	Mathematical Society.....8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL INSTITUTION.

Friday Evening Meeting. April 3.

Mr. Cowper delivered a lecture on the "Manufacture of Cotton," or rather the spinning of cotton, the foundation of cotton manufacture. The Lecturer commenced by pointing out in what the difference consisted between *Flax* and *Cotton*. In flax the fibres are long and tough; and may be extended to a foot or more in length, while the fibres of cotton wool are short and downy, and cannot be extended beyond two or three inches. Flax is produced from the stalk, while cotton is found in the pod or seed vessel enwrapping the seeds; vegetable fibre, suitable for manufacture, may be procured from the stalk, the leaves, and the pod. The flowers of the plant which yields the cotton, and which is either a tree or shrub, are in the first day of their expan-

sion of a bright yellow, the second day red, and the third of a deep chocolate; the pod then begins to ripen. A large pod was exhibited, supposed to be the produce of the *Cotton tree*, having a brown husk, which it is requisite to break up by passing through two iron rollers. In 1793, a machine was invented for clearing cotton from the husk, by means of which a man with a two-horse wheel could clean 1,000 lbs. weight of cotton in a day. The cotton, as imported, is subjected to very great pressure, in order to diminish its bulk; this is separated by many machines, and undergoes the process of cleaning, carding, drawing, roving, and spinning. The compact cotton having been separated, it is battened, blown (to remove the dust), and lapped, in order to lay the fibres all one way; this is effected by a machine, which was described. In some mills the cotton is strewed by young girls on cloth, and rolled up; the fibres of the cotton, by this manipulation, cross each other in every direction, and would be unfit for spinning; this is not however the case with flax. When it comes from the beating machine it is entangled, and is then exposed to the carding process, which lays the fibres parallel: this was formerly done by hand, similar to the carding of wool. An interesting specimen of carded cotton was exhibited, obtained from a mill at Manchester; it was exceedingly delicate and thin, and was procured on a sheet of paper by stopping the machine. The Lecturer stated that the "drawing rollers" of Mr. Wyatt, laid the foundation of cotton spinning. Beautiful models of these machines were shown in action. The cotton having passed through, is in no degree twisted, but a mere flimsy ribbon; all its fibres are, however, laid in one direction, and held together solely by the friction of their surfaces. The diameter of the fibre of cotton was stated to vary between 1.2000th to 1.3000th of an inch. In the early state of the fibre, each is a single tube, but as the pods ripen they are said to flatten and twist themselves in spiral threads, and in this way are held closer in contact. The fibre of the Smyrna cotton is said to be much the broadest. Mr. Bauer is of opinion that on each margin of the flattened fibre, a tube exists, which he observed under the microscope; this, however, is denied by Dr. Ure. As a proof of the extreme fineness of the cotton (after it has passed several times through the rollers), one pound weight has been spun into a thread which would reach from London to York. The drawing process is effected by doubling and twisting gradually, either by the *can* or other apparatus. The bobbin-fly frame was explained, together with the mode by which the cotton is wound on the bobbin; the parts of the cotton so prepared are termed rovings, these rovings are several times passed through the machine until they have been drawn out to the requisite size. Mr. Dyer's roving tubes were exhibited and explained. Cotton-spinners consider the spinning to be best performed when the cotton is as little twisted as possible, merely sufficient to keep it together. The wheels employed for spinning cotton and flax were exhibited; the former differs from the latter, in having only a single spindle, while the flax wheels are furnished with a fly.

The principle upon which *thread and cordage* is manufactured is placing two threads (or more) together. This was shown on a large scale by bundles of cotton of some thickness. Cotton was spun on the small scale by magneto-electricity. The process of mule spinning was explained, and is a mere modification of the simple spindle wheel. The cotton is usually put up in hanks, each containing about 840 yards. The machine for winding the balls of cotton was put in action. In Manchester some of the cotton factories contain 45,860 spindles, and 1,000 windows; a transparent diagram illustrated the external appearance of these extensive factories at night, when lighted with gas. In conclusion, the Lecturer stated that *wool* was formerly considered the staple commodity of the country; this is now supplanted by the imported *cotton*; and while the spinning wheel afforded employment for only 30,000 individuals, cotton machinery gives employment to upwards of one million. The lecture was illustrated by numerous models, diagrams, and preparations of the material.

On the library table were exhibited specimens of various articles from the Royal George; five specimens of tea from the South of Brazil; iron formed with stone coal; a very large specimen of the Cup Sponge (*Neptune's Vase*), from Singapore; a magnificent specimen of sulphate of iron, the crystals of very large size.

LINNÆAN SOCIETY.

April 7. Edward Foster, Esq., V. P., in the chair.

The minutes of the preceding meeting having been read and confirmed, the Chairman announced that the addresses of congratulation (which were read at a former meeting) to Her Majesty, and to His Royal Highness Prince Albert, had been presented. The Rev. John Berrington, M. A., and Sigismund Rucker, Esq., were elected Fellows, and Mr. H. Lethaby, an Associate. An interesting specimen of *Gall*, from Mexico, on a species of oak, was exhibited by Dr. Farre. Mr. Yarrell presented a specimen of vegetable structure, obtained from the bottom of a watercourse at Totness, in Devonshire, composed principally of *Oscillatoria Corium*; it very much resembled a manufactured fabric, the fibres being on the under-surface interwoven and dead, while in the upper surface the green hue was retained. It was taken from the bottom of a wooden trough, which served the purpose of a watercourse, of nearly a foot in width (a specimen had been obtained of this width, and 79 feet in length). Mr. Cameron exhibited living specimens of *Erica Mackiae*, *E. Mediterranea*, &c. The continuation of an interesting paper, by Mr. John Smith, of the Royal Botanic Garden of Kew, was read "*On the Genera Filicum*," the characters being taken from their venation. After stating the character of ferns generally, and having entered into the consideration of the minutiae of their structure, the enumeration of the several tribes, with examples of each, were adduced; to which followed an arrangement of the genera, with their synonymes and examples. The characters of the tribe *Polypodiæ* were enumerated; of the 300 typical species, considered by botanists to belong to the genus *Polypodium*, but (about) 100 are allowed by Mr. Smith to belong to that genus (possessing a *free venation*). The characters of the venation of the remaining 200 do not justify the author in placing them among *Polypodium*, and for which new genera have been instituted. Examples of the several genera and species were noticed, accompanied with remarks on their structure, *venation*, &c., deduced from Mr. Smith's long and indefatigable experience in this department of botanical science.

BOTANICAL SOCIETY OF LONDON.

April 3. J. E. Gray, Esq., F. R. S., President, in the chair.

The Secretary announced a donation of a very extensive collection of Foreign Plants, presented by Mr. Emerson, through Mr. John Morris. A paper was read from Mrs. Riley, of Paplewick, Notts, communicated by the Curator, being introductory to a series, which will form a "*Monograph on Ferns*." The communication tended to show that the study amply repays its preliminary difficulties; the law of compensation endowing cryptogamous tribes with a more ample share of minute interest, to atone for their want of flowers or fragrance. Although ferns are flowerless, they produce fertile seeds, or *sporules*, from which spring plants, possessing all the distinctive characters of the parent. The seeds of this tribe are so minute, that in former times supernatural assistance was deemed necessary to discover them, and wonderful properties attributed to them; superstition invested *fern seed* with the power of rendering its possessor invisible, and believed it was only to be obtained at the precise hour of the night at which John the Baptist was born. Ferns are in-

teresting from their form, localities, the variety of their growth, propagation, and likewise from their utility in medicine or the arts; essential oil being contained in *Pteris Plumerii*, and tannin in the genus *Pteris*, on which account it is employed in some countries for tanning kid, and other light leathers. They afford *potash* in considerable quantities when burned; the Island of Jura is said to yield £150 worth of these ashes annually, and in Sherwood Forest formerly the *brake* was cut and burned for ash-balls to soften water. *Capillaire* is flavored with *Adiantum pedatum*; and it is said that even in England, during a famine which prevailed in the reign of Henry VI., the roots of some of the tribe were made into a sort of bread; in tropical countries, where ferns abound and luxuriate, the roots of several are used for food; such are *Cyathea medullaris*, *Pteris esculenta*, *Diplodium esculentum*. In Norway and Japan the young curled tops of some are eaten as salad. The greater proportion of ferns multiply by radical offsets, and the tubers of others are produced, not only below but above the soil. In *Aspidium bulbiferum* small *pseudobulbs* are produced along the midrib of the frond; these falling to the ground, when ripe, grow freely. In *Pteris arguta* small bulbs are attached to the roots, from which occasionally young plants may be raised. In *Asplenium flabellifolium* a root is thrown out from the end of its long pendulous frond, from which a new plant is produced. In *Asplenium trichomanes* young plants grow out of the opposite surface of the frond from that which bears the fructification, but in all these varied methods of reproduction, the spiral evolution or crosier-like form of the young frond is always retained. Dried specimens of each of the above ferns accompanied the communication. The sporules of ferns retain their vitality for many years, and tend to preserve the species from destruction, as they may be procured from dry specimens. The *Asplenium Petracchii* found near the Poet's residence at Vancluse, is nearly, if not quite extinct, owing to the anxiety of travellers to preserve specimens as interesting relics. Seeds brushed from a specimen, after the lapse of many years, have vegetated and produced a number of plants, from which Mr. Riley has distributed specimens to his correspondents; a specimen accompanied the paper. The increasing attention paid to this tribe of plants was referred to, and various collections of the foreign ferns noticed, as well as the suitability of the smaller species for growing in glazed cases.

URANIAN SOCIETY.

April 7th. W. H. White, Esq., Vice-President, in the Chair.

The subject for this evening's discussion was, "Motion considered as an attribute of Matter." This discussion was opened by the Secretary, Mr. Cavalier, who stated the existence of matter as a fact, and the existence of motion as another fact. He considered matter in connection with density, extension, figure, motion, impenetrability, and divisibility, and stated as his opinion that matter was equally inclined to rest as to motion, and that some impetus was necessary to induce motion. He then considered motion to be a property of matter, or a modification of matter. Taking motion in a mechanical point of view, Mr. C. considered perpetual motion to be almost produced, but that perpetual motion could be found no where but in the stellar regions; to prove which, he instanced several binary stars. The solar system was also an example of perpetual motion. Motion was therefore to be considered either as inherent property of matter, or an *immaterial power*, acting upon a material substance.

To this last remark, Mr. Mark took a decided objection, and contended that matter could not expand *in vacuo*, so as to produce motion, and therefore objected to motion being an inherent property of matter. Mr. Sauli considered there was no power *superior* to that of matter; and that motion, taken on the great scale, could be distinctly traced

to matter, in which Mr. S. instanced the planets as examples. A long discussion ensued; the question was adjourned until the next meeting, to give Mr. Mark time to refute Mr. Cavalier's principles.

THE THEATRES.

"See that the players be well used."—*Hamlet*.

"Nothing extenuate, nor set down aught in malice."—*Othello*.

HER MAJESTY'S THEATRE.—On Tuesday night, BELLINI's opera of *Norma* was again presented with a view to introduce a new *debutante*, Mdlle. Emmelina Tosi, a pupil of Madame PASTA,—the first and unsurpassed *Norma*—who has, we understand, gained considerable reputation by her performances in the principal theatres of Italy. Emmelina Tosi is a young lady apparently twenty-five years of age, of a figure above the middle height, and which would be more graceful still were it not for her habit of stooping. Her features, excepting a contracted mouth, are good, and her eyes particularly bright and vivid. We thought when the nature of the *début* was first announced, that a bolder and more injudicious step could scarcely be adopted than bringing out a novice in the part which Giulia GRISI—who, as every body knows, is now in town—has stamped as her own; we have, however, great pleasure in saying that Signora Tosi has not been found wanting. We should pronounce her a most accomplished student in her art—an actress from strong taste, though we would not add, from deep feeling. Her animation never subsides—her emotions have no rest—they are ever changing with rapidity, and an exemplary sympathetic varied expression of look and gesticulation. For a moment, she would seem on the brink of most touching tenderness—for a moment, almost in the highest mood of highest tragedy. Quick transition, however, hindered any unequivocal point of either kind from being realised. It is impossible not to feel prepossessed with the refined and spirituelle artiste for her zealous efforts to perfect her creation, while you are assured that she will never startle nerves of ordinary firmness with any extreme display of passion. Mdlle. Tosi's voice is not remarkable for richness or compass. It would probably rank as a *mezzo soprano*, of thin but agreeable quality. Her singing indicates a finished schooling. Her happiest effect was in the duet in the second act, with Ernesta Grisi, as *Adalgisa*, "Mira O Norma" and "Si fino all' ore." Both ladies sang these two movements with great sweetness and harmony. They were warmly encored. In the last scene of the opera, Mdlle. Tosi was very successful. Upon the whole, she produced a decidedly favorable opinion upon the audience, and will, no doubt prove a valuable acquisition to Her Majesty's Theatre. On the fall of the curtain, she was called for, and complimented in the usual way.

LABLACHE was welcomed as the Arch-Druid, with the warm and cordial plaudits of the house, which were so protracted, and reiterated, that some time elapsed before the business of the stage could proceed. It is unnecessary to add, that his acting detracted nothing from his well-earned reputation.

In the part of *Pollione*, RICCIARDI acted with judgment, and sang with considerable sweetness and expression. He only wants a stronger coloring in his singing and acting, to bring forward what his science and good judgment conceive.

In the ballet, Fanny ELESSLER appeared as the *Gypsy*, and excited general admiration.

COVENT GARDEN.—Charles KEMBLE's advent here at the eleventh hour, has been the means of saving the theatre, which would otherwise, we understand, have closed its doors at Easter. Every night of this gentleman's performance, the receipts have averaged upwards of five hundred pounds, and as he receives not one single shilling for his services, the profits must have been very

considerable. Had the management withdrawn Cibber's dull comedy of the *Double Gallant*—which is played literally to empty benches—and substituted some more popular plays, their coffers might have been well filled, and the war successfully carried on till the end of the regular season.

Charles KEMBLE's appearance as *Benedick*, on Tuesday, in Shakespeare's comedy of *Much Ado about Nothing*, drew an immense house—the dress-circle and private boxes presenting a galaxy of loveliness and beauty perfectly dazzling. Her Majesty and Prince Albert were present on the rising of the curtain, and the combination of events infused such life into the actors generally, that they acquitted themselves to admiration.

Benedick is one of Charles KEMBLE's "pet" characters,—in the delineation of which, he well knows how to throw in the proper light and shade; carefully separating the serious from the more lively, and suiting every action to the circumstance of the moment. He is in a state of repose throughout,—easy, natural, and gentlemanly; alive to all that is passing around him, and intent upon turning every point to his own advantage. In Mrs. NISBETT he found an admirable *Beatrice*. Her vivacity and liveliness were never more happily apparent. She railed against matrimony in the most approved style possible, treating it as a complete joke—from some of the countenances, however, and bickerings, in our vicinity, we should say it is in reality no joke—and for smartness, sprightliness, and sarcasm, we think *Beatrice* and *Benedick* were well matched.

The general cast of the play was good; we would particularly notice DIDDEA as *Leonato*, who displayed talent of no common order, and whose performance was loudly applauded. FARREY played *Dogberry*; Miss MONTAGUE, *Hero*; and BARTLEY, *Antonio*. The fury of the latter, in Act 5, was richly graphic.

Mr. Charles KEMBLE's appearance last night, in *Hamlet*, which we shall notice in our next, is, at present, said to be the "termination of his engagement." We are, however, of opinion—knowing how these things are usually managed—that "a new engagement" will be made; and that we shall have many more "last appearances." For ourselves, we hope it may be so, for there are very few Kemble's amongst us.

HAYMARKET.—MACREADY is playing a round of his favorite characters here, with the happiest success; the house being usually crowded whenever he performs. *Richelieu* is got up with very great care and expense, and, in our opinion, the actors are seen here to greater advantage than they were at Covent Garden. WARDE, PHELPS, and MACREADY sustained, as before, the principal characters, in which they are now mellowed. The new farce, *How to Pay the Rent*, is a silly affair, showing how a cunning Irishman bilked his landlord of his rent, by hiring band of rough music and forcing him to pay to get him out of the house.

POWER, as the hero, *Morgan Rattler*, carried the piece through, but it is really very badly put together. By the by, this bantling is fatter than Power; and we fear he must plead guilty.

OLYMPIC.—An addition to the pretty and attractive little burlettas, that are here so popular, has just been made by Edward STIRLING, author of the *Ladies' Club*. It is entitled *Gwynneth Vaughan*, and the scene is laid in Wales. The plot is interesting, and may be detailed in few words.

Gwynneth Vaughan (Mrs. STIRLING), a rustic beauty, whose vanity is awakened before her affection, publicly slighted her lover, *Owen Williams* (Mr. BAKER), who (reduced to despair by the false intelligence of rival that she prefers him) goes to sea, is said to be drowned, and leaves her to vain regrets, deep repentance, and eventually an unsettled reason. For five years this state of despairing melancholy, unrelieved even by a single tear, alternates with lucid gleams of recollection, still more painful, and *Gwynneth* is fast descending into the tomb. She had, in her dreams, nightly beheld *Owen* drowning, and her unsettled fancy had led her

to prepare her own bridal dress, or shroud, as she sometimes called it. Thus arrayed, looking more like a tenant of the grave than a bride, she is startled from her death-like reverie by the voice of *Owen*, returned with as fondly-devoted a heart as ever. Deeply affected by her bereavement, he avows his unaltered attachment, claims her for his bride, and swears to devote the rest of his life to love and cherish her. Tears come to the relief of the distracted maiden, and with them returns the reason that had wandered.

The entire weight of the piece falls on Mrs. STIRLING, who portrayed with consummate ability the vicissitudes through which she is supposed to pass. We saw many a tear trembling on the eyelids of the fair occupants of the boxes; and not a few lovely faces bathed in the waters of sympathy: a pretty compliment this, to the powers of the actress. Mrs. STIRLING has added fresh laurels to her brow, and we sincerely congratulate her on the position she has taken here, as leader of the forces. Mr. BUTLER has proved himself a good general.

PARIS.—ITALIAN OPERA.—This theatre closed its doors for the season, to an immensely crowded house, as much as fifty francs having been given for a single seat in a box to witness the closing representation. The opera was Bellini's *I Puritani*, the execution of which, by the same inimitable artistes, we have repeated too frequently to be able to say a word in addition. After the termination of the performance on that night, and the distribution of the usual parting plaudits and bouquets of the public to Mdlle. Grisi, Rubini, Lablache, and Tamburini, an agreeable surprise, we learn, awaited these admirable vocalists behind the curtain. A well-known Spanish capitalist, not less distinguished by his wealth than by his patronage of the arts, had directed to each a present of costly jewellery,—to the lady a brilliant necklace, and to the gentleman diamond rings and brooches of the most costly description. Madame Albertazzi received a beautiful bracelet; nor was Madame Persiani, though absent, forgotten. The secondary vocalists also received marks of the donor's munificence, and altogether the unexpected and splendid nature of these presents created quite a sensation. We understand that all the company return to the theatre under the new direction; the privilege having been granted to M. C. Dormoy and M. Marliani, at the special request of the principal singers above named, who had an audience of the ministers for the purpose, and who declined to return to Paris on any other terms. M. Tamburini produced a letter of engagement from the Imperial Theatre at St. Petersburg, which awaited his signature, and which he had only delayed to learn the determination of the minister. In consequence, the privilege was granted as before stated. Some little doubt exists as to the return of Rubini, who wishes much to retire; but there is every reason to believe that he will defer his final departure from the stage one more season, in obedience to the wishes of his brethren as well as of the Parisian public, who would deeply regret his loss. The artistes are now all on their way to London.

PALAI'S ROYAL.—A vaudeville, entitled *Les Chanteurs des Rues*, has been brought out here, with complete success. Achard, Toussez, and Lemenil, support the principal characters, and "keep up the ball" from the commencement to the close of the piece in the most amusing style. The pursuit of a fair damsel by rival sons of Apollo, who exercise their humble vocal calling in the streets, and her marriage to the successful wooer, form the material, the entire value of which consists in the fun embroidered upon it by the three first-rate *farceurs* we have named, who have not often exerted their talents with more effect.

Alexander Batta, the celebrated violoncellist, has given a delightful *soirée* at Erard's. He played in trios of Mayeder and Beethoven, and executed a fantasia on themes from Donizetti's *Lucia*, as also

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DRAMATIC DEPARTMENT.

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* * * A Solicitor is in attendance (daily) from Eleven to Two o'clock, who may be consulted on all points of Patent Law.

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THE



INVENTORS' ADVOCATE,
AND JOURNAL OF INDUSTRY,
A WEEKLY BRITISH AND FOREIGN MISCELLANY OF INVENTIONS, TRADE, MANUFACTURES, LITERATURE, AND THE ARTS.

PRINTED BY JOHN EAMES, 7, TAVISTOCK STREET, COVENT GARDEN.

No. 37.]

SATURDAY, APRIL 18, 1840.

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NAVIGATION BY STEAM.

A Paper on this subject, in the last published number of the *Monthly Chronicle*, contains a great deal of valuable information on the vast and deeply-interesting question of steam-boat travelling and traffic. Whether in a national or social point of view, the history and present condition of the steam marine of this country must be admitted to be of the utmost interest. The politician cannot but regard steam navigation as an important element of the national power, nor can the philosopher, who earnestly watches the progress of social changes, contemplate a more active agent in such progress than steam navigation, and the results which appear to be absolutely dependant upon it. It is said that, during the present session, some legislation is to be attempted with a view to the better regulation and additional security of steam vessels. The President of the Board of Trade has, however, delayed this measure, in consequence, we believe, of a desire to obtain some more information upon so important a subject before acting upon the recommendation of a commission which was appointed early in the last year to investigate the circumstances of the accidents which had occurred, and to suggest means for their prevention in future.

In order to spread abroad, as far as lies in our power, the information upon this matter, which it is useful for the public to possess, we shall proceed to abstract some of the leading points from the able article to which we have already alluded.

By a report laid before Parliament, respecting the mercantile steam-marine of the United Kingdom and its dependencies, at the end of the year 1838, it appeared that there were in the whole of the British dominions (not including Government vessels) 810 steam vessels, of which the registered tonnage was 87,907 tons, the computed tonnage 175,840 tons, and the power that of 63,250 horses. The number of vessels above 200 tons registered burthen, appears to have been 130. In 1835 it was ascertained by the collectors of pier-dues, that the number of steam-boat passengers between London and Gravesend alone was 670,452; and before a committee of the House of Commons, in 1836, it was stated that at least 1,057,000 passengers passed Blackwall in steam-vessels every year. Since 1836, it is computed that the number must have greatly increased; but there is no authentic return on the subject.

On the subject of the steam intercourse between England and Ireland, the writer in *The Monthly Chronicle* says:—

"The extent to which the trade and intercourse between England and Ireland have been augmented,

since the introduction of steam, it is difficult to calculate; but a statement was furnished a few years ago to the House of Commons, by the manager of a company trading with steam vessels between Ireland and Liverpool, from which it appeared that the agricultural produce imported from Ireland into that one port, amounted in 1831 and 1832 to about 4,500,000*l.* annually; and a great part of this trade was made up of articles—such as live cattle, horses, sheep, and pigs—that could not have been carried across the sea with the same profit to the merchant by any other conveyance than steam. The value of the live cattle, &c., thus imported into Liverpool, amounted in 1831 to 1,760,000*l.*; and in 1837 it had already increased to 3,397,760*l.* Previously to the introduction of steam navigation, the whole cattle trade from Ireland to England was comparatively insignificant. In 1817, 29,460 sheep, and 24,193 pigs, were imported from the 'Sister Kingdom' into all England and Scotland; in 1837 the importation with Liverpool alone amounted to 250,000 sheep and lambs, and to 395,422 pigs."

As to the accidents of steam boats; it appears that the commissioners of inquiry have found out, during the twenty-two years that steam navigation has existed, *ninety-two* accidents attended with loss of life. Forty have been wrecked, or have founders, by which 308 persons were lost; there have been twenty-three explosions of boilers, by which 77 persons were killed; seventeen fires from various causes, by which two lives were lost; and twelve collisions, by which 66 persons were destroyed. Total, 92 vessels and 452 lives lost. Besides these, were three vessels not heard of after leaving port, and casualties in the Thames and Clyde, making altogether, in twenty two years, the loss of 634 lives.

On the comparative advantages between steam-boats and sailing vessels, the writer thus argues:—

When we find that three millions of property, and a thousand lives, are estimated to be annually lost by shipwreck, we think we are justified in congratulating the country on the great comparative security which appears to be offered by the steam-boat. But it may be urged by some of our readers, that the greater extent of our mercantile marine is sufficient to account for the greater loss of life and property. Let us examine a little into this argument. It appears from Mr. Porter's tables, that, in 1836, Great Britain and her colonies owned 25,000 vessels, of an aggregate tonnage of nearly 2,800,000. We have seen that, in 1835, the vessels lost were 350 in number. Assuming the same loss for the ensuing year, we have one shipwreck for every 45 vessels afloat. In the same year of 1836, according

to the schedule of Messrs. Parkes and Pringle, ten steam-boats are stated to have met with serious accidents; six of these accidents were attended by the complete destruction of the vessel, but only in one instance were those gentlemen able to ascertain the loss of a single life as connected with any one of the serious accidents of that year. In 1836, let it not be forgotten, 600 steam-boats were afloat in our waters. Even this comparison, however, does but scanty justice to the steamer as compared with the sailing vessel; for the much greater celebrity of the former, and her consequently greater number of voyages, has not yet been taken into consideration.

One frequent subject of complaint has been the great insecurity of the river Thames of late years, in consequence of the reckless rapidity with which steam-boats are navigated in our crowded pool, and to this subject it became of course necessary for Messrs. Pringle and Parkes to direct a portion of their attention. They have with much labor collected a list, as complete as possible, of all the accidents that were occasioned by steam-boats on the river Thames, during a period of three years and a half,—namely, from May, 1835, to December, 1838. We will not weary our readers by reprinting the whole of this list, but the following digest will show at once how much mischief these terrible steamers have committed on the bosom of our venerable Thames:—

Number of persons drowned or otherwise killed by steamers upsetting boats, &c.	43
Number of persons who sustained bodily injury	5
Number of persons thrown into the water, but saved from drowning	72
Total personal accidents.....	120
Number of wherries, barges, smacks, or other craft, sunk and injured by steamers.....	59
Number of steamers seriously damaged by collision with each other.....	12
Total accidents to vessels.....	71

Heaven forbid we should speak lightly of the loss of a single human life! but really, when we consider the outcry that has so often been raised by the newspapers, about the frightful loss of life occasioned in the river by the culpable conduct of captains of steamers, we did expect that more than 43 lives had been lost during a period of three years and a half. And let us see, during that time, what the activity of steam navigation on the river has been. From the accounts taken at the government

dock-yard at Deptford, it appears that the number of steam-boats that pass weekly amount to 700. Multiplying this number by 52

We obtain as the number of steam-boats passing annually up and down the river before the dockyard at Deptford 36,400 37

Or, in three years and a half 127,400

It would therefore appear that the enormous number of 127,400 trips had probably been performed up and down the river during these three years and a half; so that, including even the 72 individuals, whose sufferings extended no farther than a ducking, (no very pleasant occurrence, certainly,) there would not be quite one personal accident for every thousand trips performed by steamers on the river Thames.

The above remarks, we trust, will go far to tranquillise the minds of those of our readers who have been heretofore alarmed by the harrowing accounts which the public press has from time to time put forth, from the amiable desire of amusing Her Majesty's lieges, by frightening them out of their wits.

We conclude, with the writer's remarks touching the necessity for vessels being sea worthy, previous to their leaving port:—

What is really required, is some system to enable the local authorities to interfere to prevent a vessel notoriously unseaworthy from leaving a port. In almost every instance that has yet occurred of the wreck of a steamer, it was notorious, at the time she left her port, that she was not in a fit condition to be sent to sea. The *Forfarshire*, the *Northern Yacht*, and the *Rothsay Castle*, were well known to be unfit for sea some time before they were lost. But would the whole cumbrous machinery of licensers, surveyors, clerks, and commissioners, secure the country against the recurrence of similar misfortunes? No code of regulations can supply the place of a skilful captain, or that of a sober and careful engineer; but once introduce the fallacious precautions of surveys and licenses, and the public will be led to expect security from a system of vexatious interference, rather than from the established character of the owners and commanders, which, after all, are the only real guarantee that the public can have for the proper construction and outfit of the vessels.

Ought there, then, to be no survey? it may be asked. Our reply is, that there ought to be as little interference as possible, for unnecessary regulations operate injuriously upon every description of manufacture; and it may safely be assumed, that the rapid progress which steam navigation has already made, has partly been owing to the freedom from restraint which this branch of industry has hitherto enjoyed. Nevertheless, there are cases in which interference becomes necessary. Passengers are seldom qualified to judge of the seaworthiness of the vessel they are about to embark in; and whenever there are good grounds for distrusting a vessel, Government is bound to interfere for the protection of those about to confide their lives to a steam-boat, or to any other ship. Such interference, however, as we have already seen, is, in reality, less frequently required for steam-boats than for sailing vessels; and on this ground we shall ever protest against an attempt to subject the former to a system of interference, which has never been deemed necessary with respect to the latter. An Act of Parliament already exists, known as the Colonial Passengers' Act, which was passed in 1835, to enforce certain regulations for the security of the vessels employed in the conveyance of emigrants to Canada. By this act, a power is given to magistrates to interfere, whenever they have reason to believe that an unsaworthy vessel is about to be employed. Now, if it is felt that some such control is also necessary with respect to steamers, why not extend to these the enactments of the Passengers' Act? Give the magistrate the power to interfere, where he believes the interference called for;

but, until we are convinced that it is really necessary, let us not impose a cumbrous, expensive, and vexatious machinery, which must operate as a clog upon industry, and as an indirect tax upon one of the most important branches of our mercantile marine.

No system of regulations will ever secure us against the occasional recurrence of calamities, the result of culpable carelessness on the part of captains or engineers, nor will it ever be possible to suggest any code of construction that shall prevent bad vessels from being built. Hitherto, we firmly maintain it, steam boat accidents have been of remarkably rare occurrence; and if ships notoriously unfit for sea are not allowed to leave their moorings till they have been properly inspected, those accidents will become even less frequent than they now are. To obtain this additional security, however, not one additional commissioner or surveyor need be appointed. There are surveyors already in every port in the kingdom, to look after the interests of the underwriters at Lloyd's; and it is but seldom that these surveyors will have any occasion to call in the assistance of an engineer, to enable them to judge of the condition of a steamer. The real security of the public will ever be found in the respectability of the several companies whose character and capital are engaged in these gigantic enterprises, and who must look for certain ruin if their vessels are allowed to get a bad name.

THE SULPHUR QUESTION.

The *Sud de Marseilles* of the 8th, in a long article on this subject, warmly pleads the cause of England against the King of Naples, who, it maintains, in establishing the monopoly, had violated the private treaty existing since 1816 between Great Britain and the Kingdom of both Sicilies. As far as France is concerned in the question, the *Sud* considers the King fully justified in establishing the sulphur, or any other monopoly he might please. "France had no right," says that paper, "to complain, and accordingly confined herself to obtain redress by negotiation; but England was placed in a different situation: the King of Naples had violated a treaty, of which she had a right to require the maintenance." The *Sud* then contends that "English interests sustained a greater injury by the arbitrary decision of the King of Naples than those of any other country;" that "French trade is deeply interested in the success of their claims," and it "trusts that France will not countenance the pretensions of His Sicilian Majesty in his differences with Great Britain, but will consider it her duty to make him feel that the law of nations in Europe no longer admits in international relations the regimen of the *bon plaisir*, which leaves no security to commercial transactions, and no guarantee to interests."

The *Sémaphore de Marseilles* of the 9th, publishes the following official communication respecting the sulphur affair:—

"MARSEILLES, April 8, 1840.

"The prefect of the Mouths of Rhone has communicated to the Chamber of Commerce a copy of the following despatch, addressed on the 2d instant to the Government of the King by the Chargé d'Affaires of France in Naples:—

"The Minister of England received yesterday, from the Neapolitan Government, an unsatisfactory reply to his last note. He forwards, by the French Government steamer (which called in at Civita Vecchia), on the 4th, a courier, who is the bearer of the sealed instructions he had previously received from his Court for Admiral Stopford.

"Preparations for defence are proceeding with activity; troops and provisions are shipped for Sicily. Naples is very tranquil.

"MICHAEL ROUSSIER,

"Secretary of the Chamber of Commerce."

"The resolution of Mr. Temple," says the correspondent of the *Constitutionnel*, "excited a

lively sensation among the *corps diplomatique*. The representatives of foreign powers are at this moment perplexed to know through what channel they can transmit advice or even an official representation to the Neapolitan Government. The Prince de Scilla is ill, and there is nobody to replace him. We have, however, been informed that M. d'Haussonville, the French Chargé d'Affaires, had obtained an audience of the King, to whom he had submitted suggestions of conciliation, which Ferdinand had listened to with attention. But the King, although ready to hear advice, is seldom guided by it, and acts according to his own personal inspirations. What happened to the Prince of Cassaro is a proof of it; the King has banished him to Foggia in Adulia.

"The Chargé d'Affaires of Austria has hitherto kept entirely aloof.

"In this situation of affairs, we may expect some acts of maritime hostility on the part of England. Nevertheless, it is not thought that Admiral Stopford has been instructed to proceed to an immediate blockade of Neapolitan harbours. The Admiral, previous to the adoption of a measure so decisive, will, in all probability, send one of his officers to Naples to have a conference with Mr. Temple. It is probable that the English will begin by capturing some Neapolitan vessels, which they will keep as a guarantee for the payment of the indemnity the British Government claims.

"In the meanwhile, the king of Naples is organising his means of defence. On the 30th he sent a company of artillery to Sicily in a sailing vessel.

"The Ferdinand II. and the Neptune have taken on board, the first a battalion of the 10th regiment of infantry, for Messina, and the other a battalion of chasseurs. The batteries of the harbour are about being armed, and two large barges, mounted with bronze cannon, are to be stationed in the port. Swiss battalions occupy the New Castle and the fort of the Egg.

"The defence of Naples is to be confided to the civic guard, to a regiment of Sicilian chasseurs, and two Swiss battalions. The second Swiss regiment has been sent to Messina. All these measures occasion considerable agitation. Nevertheless, the population remains quiet. The merchants entertain apprehensions, and the Neapolitan stock has fallen since the 22d of March from 104½ to 101."

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING APRIL 11, 1840.

ENGLAND.

Not a single patent has expired during this week.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO THE WEEK ENDING APRIL 11, 1840.

(Continued from our last.)

ENGLAND.

FRANCIS GIBBON SPILSBURY, Walsall, Staffordshire, chemist, MARIE FRANCOISE CATHERINE DOETZER CORBAUX, Upper Norton-street, Middlesex, artist, and ALEXANDER SAMUEL BYRNE, Montague-square, Middlesex, *improvements in paints or pigments, and vehicles, and in modes of applying paints, pigments, and vehicles*, April 7.—This improvement is for producing a paint that shall not be combined with oil or turpentine, and yet it may be washed with soap and water or as other paints.

There are several methods proposed, but the following may be considered the principal: 160 lbs. of

sulphate of lime, 20 lbs. of gelatine, and 14 lbs. of sulphate of zinc, gradually mixed with warm soft water, and a portion of alum. The whole are ground to the consistence of paste, which may be kept in barrels for use. The zinc preserves the gelatine, and the alum fixes the color. If albumen is used, the sulphate of zinc is not required.

Should any resinous matter be used, it must be dissolved with alkaline ley, or if flour paste be employed, it is requisite to use silicate of potassa, or soda, commonly called liquor of flint.

SAMUEL HALL, Basford, Nottingham, civil engineer, *improvements in propelling*, April 7.—The object of this invention is to draw in or extend the paddle-boards to a smaller or larger compass, according to the depth of the vessel in the water.

In ordinary paddle-wheels, it requires an extra force to impel the wheels when they are very deep in the water, and the back water considerably diminishes the speed of the vessel. By this improvement, the paddle-boards are made to slide on the radiating arms of the paddle-wheels, so as to bring them to the most convenient position for acting on the water. Two wheels are placed on the paddle-shaft, close to the arms, and which, being connected by a coupling box, rotate with or without the paddle shaft. On the periphery of these wheels are cogs, gearing with two pinion wheels, attached to one axle; the face of these wheels is a disc, with an inclined or incurvated eccentric surface, which moves the rods connected with the paddle-board. When it is required to draw in the boards, a winch handle is applied to the axle of the pinion wheels, by which means the two disc wheels are turned on the paddle shaft, and the inclined surface of these wheels draw the rod connected with the paddle-boards, so as to bring them to a smaller circle, or they may be drawn close to the shaft, when not in use, or when the vessel can be navigated by a favorable wind.

Another improvement is to unship the paddle-wheels, which are held on to the shaft by a socket and brackets with holding screws or cramps.

JAMES SMITH, Deanston-works, Kilmarnock, Perth, cotton-spinner, *certain improvements applicable to canal navigation*, April 10.—The inventor sets forth that by his improvement a canal boat or barge may be conducted through a lock without any stoppage, as heretofore.

The lock gate is formed on a novel principle, and is placed on an inclination from the bed of the canal towards the higher surface of the water. The sill being firmly fixed at bottom, the gate is attached to it by a trunion hinge or continuous joint. The body of water from above keeps the gate always pressed to the bearing on each side of the lock; and in order to depress this gate, the boat or barge has a temporary prow, which being formed with a gradual curve, presses, by means of the power applied, the lock gate down, and a sufficient quantity of water passes with the boat or barge into the next channel or lock.

The second improvement is for propelling a boat or barge along a canal. A large wheel with radiating arms is placed in the centre of the vessel, and by means of a forked lever, passing on each side of the wheel, it is made to rise or fall with the uneven surface of the bed of the canal. The connecting rod from the crank shaft of the engine to the crank of the driving wheel, moves with the varying positions of the forked lever.

It will be observed that the large wheel with radiating arms takes its bite on the ground or bed of the canal, while the vessel itself is floated by the water.

JAMES SMITH, Deanston-works, Kilmarnock, Perth, cotton spinner, *a self-acting temple, applicable to looms for working fabrics, whether moved by hand or power*, April 10.—To the rail or beam over which the cloth passes to the roller, two moveable brackets are attached, with their projecting points towards the reed or slay. The temple is rendered self-acting by having near it two revolving discs with prickles on their periphery, and which inclines out-

wards, so as to hold near the fell or face of the cloth, for preventing the hurtful pressure of the selvage threads on the slay or reed during its traverse motion. The temples and discs are secured to the ends of rods, which slide in or out, according to the width of the cloth, and are adjusted and held by pinching screws at the end of the brackets. Thus while the reed is working up the west, and the cloth beam winding up the manufactured article, the prickled discs revolve, and hold out the fabric as far as the temples, which are placed to any width required.

DAVID HAROURT, Birmingham, Warwick, *improvements in castors, for furniture and other purposes*, April 10.—That part of the castor called the horn has a rising projection, passing over the roller, and forming a pivot for a wheel, which is held in contact with the track round the bottom edge of the socket that fixes on to the leg of the table or chair.

Another improvement is for securing a long tube to the flange of the socket, and at the end of the tube is a bearing of case-hardened metal. This tube passes up the leg of the table or chair, and the pin of the flange, connected with the roller, passes up this tube, by which means the castor is not so likely to break off, there being a better and more firm hold on the leg of the chair or table.

JOHN LOTHIAN, Edinburgh, Scotland, geographer, *improvements in apparatus for measuring or ascertaining weights or pressure*, April 10.—The inventor has given an elaborate description of his invention, which is simply a balance weight, in the shape of an eccentric wheel, the periphery of which is grooved, to receive the cord or chain of the scale and counterpoise. This eccentric wheel is placed on an axle, that has its under-edges formed with angles to work on suitable bearings.

The longer and narrower side of the eccentric wheel is used for the scale, and the reverse end receives the cord or chain of the counterpoise. Thus while the scale, acting on one side, shortens its power of leverage, by the cord or chain passing from the periphery of the eccentric wheel, the reverse end rises and bears up the cord with the counterpoise.

There are several modifications of this improvement, such as dividing the eccentric wheel, and forming a scroll at one end of each half, which are affixed to the axle at opposite points; the balance weight acting as counterpoise is attached to one half, while the scale is attached to the other half. There is also an eccentric wheel with a lever and weight at its end, very similar to Mr. Newton's invention, described in our list of specifications, dated March 28, No. 34.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of May 23. Each party will receive, in addition, a *private* communication to the same effect.

James White, Lambeth, Surrey, engineer, due May 12.

William Chesterman, of Bursford, Oxford, due May 12.

Moses Poole, Lincoln's-inn, due May 12.

Moses Poole, Lincoln's-inn, due May 12.

William Wiseman, George-yard, Lombard-street, due May 16.

John Burn Smith, of Salford, Manchester, cotton spinner, due May 16.

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED FROM JANUARY 1ST TO JUNE 30TH, 1832.

(Continued from page 213.)

Air,—see Blowing and exhausting, P. J.

Alphabet,—see Philosophic, E. G.

Apparatus,—see Transporting, C. W.

Beaver,—see Machine, W. J.

Blowing and exhausting air, June 9, Perkins, J.

Bread by machinery,—see Bricks, L. J.

Bricks, tiles, bread, or other plastic material made by machinery, April 13, Longbottom, J.

Cane,—see Whipstick, T. J. A.

Captains, January 20, Lithu, J.

Carding cotton, &c., June 5, Bolton, H.

Carriages, &c., March 8, Chaplin, W.

Cocks for gas or water, March 15, Day, J.

Cocks or taps for liquids, March 1, Beard, C.

Compasses,—see Ships, P. G.

Copper, lead, &c., separated from earthy and other substances, March 8, Kingston, J. F.

Culinary articles,—see Polishing and making, M. J. and J.

Cultivating lands,—see Draining, II. J.

Doubling frames,—see Throstles, A. C.

Dairying and cultivating land, and machinery applicable thereto, May 15, Heathcoat, J.

Dressing and finishing woollen cloth, March 3, Oldland, G.

Dyed silks improved, May 3, Hendrie, R. J.

Engine for mechanical purposes, Feb. 9, Ericsson, J.

Excavating and self-loading cart, Jan. 24, Palmer, G. V.

Fibrous substances,—see Manufacturing, II. J.

Fluids and liquors, regulating the course, January 31, Smith, C.

Framework knitting,—see Machine, A. B.

Fur-cutting,—see Machine, W. J.

Gaiters or spatterdashes, March 27, Gaunt, T.

Gas, improvements and refuse of, June 9, Lowe, G.

Gas,—see Cock, D. J.

Gig machines for dressing woollen cloths, March 8, Wells, W.

Gig machines for dressing woollen cloths, March 1, Walker, S.

Goods, or passengers,—see Transporting, C. W.

Heating and ventilating apparatus, June 5, Sylvester, J.

Heating and ventilating buildings, ships, &c., June 22, Robinson, A.

Heating buildings by the circulation of fluids, May 15, Busby, C. A.

Indigo,—see Prussiate, H. H.

Instrument to measure and beat time, applicable to the teaching of music, June 28, Gillet, H. G.

Keys of pianofortes,—see Ornamenting, I. F. W.

Lace,—see Ornamenting, H. J.

Lead,—see Copper, K. J. F.

Letters,—see Philosophic, E. G.

Machine for cutting the fur from beaver or other skins, March 15, Wainsley, J.

Machine for imitating medals, sculpture, and works in relief, April 9, Bate, J.

Machine for making stockings, or frame-work knitting, &c., March 8, Abbott, B.

Madder, and madder previously used, June 2, Steiner, F.

Mangel-wurzel, producing articles of commerce from, March 22, Young, P.

Mangle, June 2, Hubie, W.

Manufacturing certain fibrous substances, April 28, Holt, J.

Meal from ground wheat, or other grain prepared, May 3, Goodlet, G.

Medals,—see Machine, B. J.

Metal not hitherto used for certain manufacturing purposes, April 13, Cook, B.

Music, teaching of,—see Instrument, G. H. G.

Nail-making, February 25, Church, W.

Nail-making, March 1, Joyce, J.

Oil,—see Oleaginous, D. J.

Oleaginous matter from a vegetable kernel, for oil, candle, soap, April 13, Domeur, J.

Ornamenting lace, net, &c., Feb. 16, Heathcoat, J.

Ornamenting the finger keys of pianofortes, &c., June 28, Isaac, F. W.
 Paddle-wheels, January 17, Galloway, E.
 Paddle-wheel, revolving spiral, March 22, Woodcroft, B.
 Paint varnish, substitute for, March 22, Cook, B.
 Paper-cutting, March 15, Towgood, M.
 Paper-making, March 15, Brewer, H.
 Pens, January 28, Perry, J.
 Philosophic Alphabet, letters to denote the sounds of languages, April 13, Edmonds, G.
 Polishing and making ladies, spoons, and culinary articles, January 24, Maybury, J. J. and J. junior.
 Printing presses, March 22, Day, W.
 Prussiate of potash and soda, and the prussiate of iron, as a substitute for indigo, also machinery, March 22, Hendricks, H.
 Railway improvements, June 29, Macdonald, J.
 Raising or brushing woollen cloths, &c., February 16, Atkinson, R.
 Raising water or fluids, January 31, Fuller, T. I.
 Raising water by steam, January 30, Wharton, W. L.
 Sculpture,—see Machine, B. J.
 Ship's compasses, May 26, Preston, G.
 Silks,—see Dyed, H. R. J.
 Smelting pig iron, January 17, Teague, M.
 Soap,—see Oleaginous, D. J.
 Soda water, &c., March 8, Bakewell, F. C.
 Spatterdashes,—see Gaiters, G. T.
 Spectacles,—see Transparent, S. G. E.
 Spinning cotton, &c., April 26, Montgomery, R.
 Spinning flax, &c., April 13, Shankland, A. B.
 Spinning machinery, January 28, Jellicorse, J.
 Spoons, &c.,—see Polishing and making, M. J. and J.
 Steam-boilers, April 28, Dance, Lt. Col. Sir C. W.
 Steam-engines and valves, April 13, Roberts, R.
 Steam-engines, June 9, Brown, W.
 Steam-engines, March 28, Beale, J. T.
 Stockings,—see Machine, A. B.
 Table furniture, &c., February 16, Nettlefold, J. S.
 Throstle and doubling frames, May 1, Axon, C.
 Transparent substance for spectacles, &c., February 16, Solomons, G. and E.
 Transporting Goods, or passengers, apparatus employed in, February 9, Church, W.
 Valves,—see Steam-engines, R. R.
 Varnish,—see Paint, C. B.
 Vegetable from decay, March 31, Kyan, J. H.
 Ventilating,—see Heating, R. A.
 Ventilating, see Heating, S. J.
 Wheat, &c.,—see Meal, G. G.
 Whipstick or cane, June 5, Taylor, J. A.
 Woollen cloth,—see Dressing, O. G.
 Woollen cloths,—see Gig machine, W. S.
 Woollen cloth,—see Gig machine, W. W.
 Woollen cloths,—see Raising or brushing, A. R.

BRITISH PATENTEES.

AN ALPHABETICAL LIST OF INDIVIDUALS WHO HAVE TAKEN OUT PATENTS IN ENGLAND, FROM JANUARY 1ST TO JUNE 30TH, 1832.

(Continued from page 214.)

Abbott, Benjamin, Machine for making stockings, or frame-work knitting, &c., March 8.
 Atkinson, Richard, Raising or brushing woollen cloths, &c., February 16.
 Axon, Charles, Throstles and doubling frames, May 1.
 Bakewell, Frederick C., Soda water, &c., March 8.
 Bate, John, Machine for imitating medals, sculpture, and works in relief, April 9.
 Beale, Joseph T., Steam-engines, March 28.
 Beard, Charles, Cocks or taps for liquids, March 1.
 Bolton, Hugh, Carding cotton, &c., June 5.
 Brewer, Henry, Paper-making, March 15.
 Brown, William A.,—see Hendricks, Herman.
 Brown, William, Steam-engines, June 9.
 Busby, Charles A., Heating buildings by the circulation of fluids, May 15.
 Chaplin, William, Carriages, &c., March 8.

Church, William, Nail-making, February 25.
 Church, William, Transporting goods or passengers, apparatus employed in, February 9.
 Clark, John J.,—see Nash, John.
 Cook, Benjamin, Metal not hitherto used for certain manufacturing purposes, April 13.
 Cook, Benjamin, Paint varnish, substitute for, March 22.
 Dance, Lt. Col. Sir C. W., Steam-boilers, April 28.
 Day, John, Cocks for gas or water, March 15.
 Day, William, Printing-presses, March 22.
 Demeur, John, Oleaginous matter from a vegetable kernel, for oil, candle, soap, April 13.
 Edmonds, George, Philosophic Alphabet, letters to denote the sounds of languages, April 13.
 Ericsson, John, Engine for mechanical purposes, February 9.
 Fuller, Thomas I., Raising water or fluids, Jan. 31.
 Galloway, Elijah, Paddle-wheels, January 17.
 Garsed, Edward,—see Robinson, Alfred.
 Gaunt, Thomas, Gaiters or spatterdashers, March 27.
 Gibbs, Joseph,—see Chaplin, William.
 Gillet, Harriet G., Instrument to measure and beat time, applicable to the teaching of music, June 28.
 Goodlet, George, Meal from ground wheat, or other grain prepared, May 3.
 Heathcoat, John, Draining and cultivating land, and machinery applicable thereto, May 15.
 Heathcoat, John, Ornamenting lace, net, &c., Feb 16.
 Hendricks, Herman, Prussiate of potash and soda, and the prussiate of iron, as substitute for indigo, also machinery, March 22.
 Hendrie, Robert J., Dyed silks improved, May 3.
 Holt, John, Manufacturing certain fibrous substances, April 28.
 Hood, Charles,—see Abbott, Benjamin.
 Hubie, William, Mangle, June 2.
 Isaac, Frederick W., Ornamenting the finger keys of pianofortes, &c., June 28.
 Jellicorse, John, Spinning machinery, January 28.
 Joyce, John, Nail-making, March 1.
 Kingston, John F., Copper, lead, &c., separated from earthy and other substances, March 8.
 Kyan, John H., Vegetable from decay, March 31.
 Lihou, John, Capstans, January 20.
 Longbottom, John, Bricks, tiles, bread, or other plastic material, made by machinery, April 13.
 Lowe, George, Gas, improvements and refuse of, June 9.
 Macdonald, James, Railway improvement, June 29.
 Maybury, Joseph John, and Joseph, jun., Polishing and making ladies, spoons, and culinary articles, January 24.
 Montgomery, Robert, Spinning cotton, &c., April 26.
 Nash, John,—see Longbottom, John.
 Nettlefold, John S., Table furniture, &c., Feb. 16.
 Oldland, George, Dressing and finishing woollen cloths, March 3.
 Palmer, George V., Excavating and self-loading cart, January 24.
 Perkins, Jacob, Blowing and exhausting air, June 9.
 Perry, James, Pens, January 28.
 Petherick, Thomas,—see Kingston, John F.
 Preston, Grant, Ships' compasses, May 26.
 Roberts, Richard, Steam-engines and valves, April 13.
 Robinson, Alfred, Heating and ventilating buildings, ships, &c., June 22.
 Shankland, Alexander B., Spinning flax, &c., April 13.
 Smith, Collin, Fluids and liquors, regulating the course, January 31.
 Solomons, George and Elias, Transparent substance for spectacles, &c., February 16.
 Steiner, Frederick, Madder, and madders previously used, June 2.
 Sylvester, John, Heating and ventilating apparatus, June 5.
 Taylor, Joseph A., Whipstick, or cane, June 5.
 Teague, Moses, Smelting pig iron, January 17.
 Towgood, Matthew, Paper-cutting, March 15.
 Walker, Samuel, Gig machines for dressing woollen cloths, March 1.
 Walmsley, John, Machine for cutting the fur from beaver or other skins, March 15.
 Warner, Henry,—see Hood, Charles.

Wells, William, Gig machines for dressing woollen cloths, March 8.
 Wharton, William L., Raising water by steam, January 30.
 Woodcroft, Bennet, Paddle-wheel, revolving spiral, March 22.
 Young, Peter, Mangel-wurzel, producing articles of commerce from, March 22.

FOREIGN PATENTS.—BELGIUM.

LIST OF PATENTS RECENTLY GRANTED BY THE BELGIAN GOVERNMENT.

(Continued from No. 36.)

Ozil, N. A., of Brussels, rue de l'Empereur, No. 14, a patent of addition for 15 years, to date from March 19, 1840, for additions to the new system of tanning, for which he obtained a patent March 19, 1840, March 29, 1840.

Nolle, T. H. F., of Brussels, rue du Musée, No. 6, a patent of invention for 10 years, for a new system of fire-engines, applicable to other purposes, April 5, 1840.

Delvaux, H. F., of Brussels, Montagne aux Herbes Potagères, No. 23, a patent of invention for 5 years, for a regulator for the purpose of causing smoke to ascend chimneys, and of preventing its descending into apartments, April 5, 1840.

De Alba, J. W. S., of New York, represented by Ulling, St. Josse ten Noode, rue des Arts, No. 139, a patent of invention for 10 years, for an improved method of hardening wood, stone, marble, iron, and leather; by which these substances are strengthened, preserved from decay, and made water-proof, April 5, 1840.

Lamal, Norbert, of Brussels, rue de Laeken, No. 16, a patent of addition for 10 years, to date from Nov. 9, 1839, for an addition to the patent of invention which he obtained Nov. 9, 1839, for an improved English stone, April 5, 1840.

Schumacker, J. M., of Hamburg, represented by Doré, St. Josse ten Noode, chaussée de Louvain, No. 24, a patent of importation for 5 years, for a new system of spindles, applicable to spinning machines generally, and particularly to those for spinning flax, hemp, wool, and other fibrous substances, April 5, 1840.

Het, L., and Dethis, A., of Brussels, rue des Quatre Vents, a patent of improvement for 10 years, to date from March 18, 1839, for additional improvements in the system of paving with upright and cross pieces of wood, combined with asphalt, and which is applicable to roads, bridges, &c., for which Het and Bon obtained a patent March 18, 1839, April 5, 1840.

Papin, Auguste, of Lyons, represented by Doré, St. Josse ten Noode, chaussée de Louvain, a patent of importation for 5 years, for a system of rotary steam-engine, April 5, 1840.

FOREIGN PATENTS.—FRANCE.

A LIST OF PATENTS GRANTED BY THE FRENCH GOVERNMENT FROM NOV. 6, TO NOV. 22, 1838.

(Continued from No. 36.)

No. 112. Allain and Co., of Paris, rue Boucherat, No. 34, a patent of improvement and addition to the patent of invention for 5 years, which Dubois obtained April 24, 1838, for a clock-work mechanism for the purpose of marking the seconds in every kind of movement, Nov. 6, 1838.

No. 113. Avy, Jean Veran, of Cadenet, arrondissement d'Apt, département de Vaucluse, a third patent of improvement and addition to the patent of invention for 15 years, which he obtained May 10,

1837, for a machine for spinning silk, for the purpose of spinning the rods, and at the same time of working the silk which is extracted from them in wool, fine silk, (organza), sewing silk, twist, &c., without any other expense for manual labor than that required for obtaining the raw silk, Nov. 6, 1838.

114. Dubrunfaut, Pierre Auguste, of Paris, rue de la Contrescarpe, Saint Antoine, No. 70, a patent of improvement and addition to the patent of invention for 15 years which he obtained April 19, 1837, for processes for extracting from beet-root molasses various other products, in addition to alcohol, and particularly potash, Nov. 6, 1838.

115. Potier, son, Nicolas, of Rheims, a patent of invention for 5 years, for carding wool by steam-power, Nov. 6, 1838.

116. Ajasson de Grandsgagne, Jean Baptiste Francois Etienne, represented at Paris by Heden, rue Neuve Samson, No. 1, a patent of invention and improvement for 5 years, for improvements in the manufacture and quality of plaster, and in revivifying old plaster, Nov. 14, 1838.

117. Artaud, Prosper Auguste, of Paris, faubourg Poissonnière, No. 93, a patent of invention for 10 years, for a safety apparatus, applicable to railway trains, Nov. 14, 1838.

118. Barberot, Felix Etienne, of rue Lafontaine, Auteuil, precincts of Paris, a patent of invention for 15 years, for a new system of paving, covering foot-ways, constructing areas, floors, partitions, and roofs, Nov. 14, 1838.

119. Baron Bourgeois, Louis Desiré, of Pontoise, represented by Hedin, Paris, rue Neuve Samson, No. 1, a patent of invention and improvement for 5 years, for a press for extracting the juice of beet-root, and of all plants or vegetable substances, oleaginous, grains, &c., Nov. 14, 1838.

120. Bizot, Joseph, of Godoncourt, département des Vosges, a patent of invention for 10 years, for a new system of presses for oil-mills, which presses may be constructed of any dimensions, for all oleaginous grains, and for many other substances from which oil can be extracted by pressure, and which presses may be put in motion by any motive power, by substituting a pulley for a winch, Nov. 14, 1838.

121. Cabouret, Louis Robert, of Paris, rue du Four Saint Honoré, No. 9, a patent of invention for 5 years, for a process of manufacturing colored and streaked paper, which may be advantageously substituted for that hitherto employed, Nov. 14, 1838.

122. David, Jean Georges, of Paris, rue des Filles Dieu, No. 6, a second patent of improvement and addition to the patent of invention and improvement which he obtained Aug. 29, 1837, for an iron wheel, called "roue David," Nov. 14, 1838.

123. Desert, François, of Vertain, département du Nord, a patent of invention for 5 years, for a process of purifying loaf-sugar of all impurities, without removing it from the mould, Nov. 14, 1838.

124. Despruneaux, Gabriel, of Paris, rue du Chercle Midi, No. 71, a patent of invention for 5 years, for the manufacture of waterproof elastic hats of pure caoutchouc, Nov. 14, 1838.

125. Dez Maurel, François Marie Agathe, of Paris, Boulevard Poissonnière, No. 25, a third patent of improvement and addition to the patent of invention and improvement for 15 years which he obtained Aug. 30, 1832, for the use of bituminous cements in the manufacture of products adapted to pavings, formed of flints, glass, and wood of different colors, Nov. 14, 1838.

126. Drodrelot, Edme, of rue du Théâtre, No. 2 ter, at Grenelle, precincts of Paris, a patent of improvement and addition to the patent of invention for 15 years which he obtained Aug. 16, 1838, for a process of manufacturing a bitumen or a new bituminous mastic, Nov. 14, 1838.

127. Duhamel, Edouard, of Paris, rue Bourg l'Abbé, No. 30, a patent of invention and improvement for 5 years, for a new metallic mounting, for the

purpose of suppressing all sewn flaps, applied to braces, garters, girdles, bracelets, straps, and other works of a similar description, in skin or tissue in general, Nov. 14, 1838.

128. Foucques, Hippolyte Désiré, of Paris, faubourg Saint Martin, No. 55, and Mercier, Jean Gabriel Alexis, of Paris, rue Neuve Bourg l'Abbé, No. 8, a patent of improvement and addition to the patent of invention for 15 years which they obtained Sept. 12, 1838, for processes for dissolving glue or gelatine, and for maintaining it constantly in a liquid state, incorruptible and fit for use when cold.

129. Galibert, Pierre Hilaire, and Sarrault, François, of Paris, rue des Fournneaux, No. 18, a patent of invention for 5 years, for cylindettes and bottle syringes (seringues bouteilles), Nov. 14, 1838.

130. Ganal, Jean Nicolas, and Desrues, Michel Jean, represented by Charles Reynaud, of Paris, rue du Temple, No. 119, a patent of invention for 5 years, for means of preserving from the effects of perspiration upon hats, Nov. 14, 1838.

131. Godard, Jacques Prosper, of Paris, rue des Mauvais Gargons Saint Jean, No. 9, a patent of improvement and addition to the patent of invention for 15 years which he obtained Oct. 16, 1838, for a new product, which he calls extract of beer, Nov. 14, 1838.

132. Guillaumet, Manuel Theodore, of Argentan, département de l'Orne, a patent of importation for 15 years, for a new apparatus for the purpose of enabling to breathe and work under water, Nov. 14, 1838.

133. Hermann, Georges, of Paris, rue de Charenton, No. 102, a patent of invention and improvement for 5 years, for a process of turning cylinders in crystal, porcelain, free stone, or granite; for machines for grinding fine oil and other colors, and chocolate; and for an improved construction of these machines with sliding collars (collets à coulisse), for regulating them with facility, Nov. 14, 1838.

134. Justin, Placide, of Paris, rue Gaillon, No. 13, a patent of improvement and addition to the patent of invention and improvement for 15 years which he obtained April 24, 1838, for a new mode of forming stereotype plates, by which the rotary cylindrical press may be applied to obtaining typographical impressions, and likewise to printing papers and colored stumps, Nov. 14, 1838.

135. Landry, Louis Ambroise, of Paris, rue de la Sourdière, No. 5, a patent of invention for 5 years, for a new sawing machine, Nov. 14, 1838.

136. Laurens, Camille, of Paris, rue des Saints Pères, No. 7, a patent of invention for 15 years, for a new arrangement of the electro-magnetic machines, Nov. 14, 1838.

137. Le Comte de Mauny, Jacques Marie François de Reviers, represented at Paris by Paulin Desormeaux, rue des Maçons Sorbonne, No. 3, a patent of improvement and addition to the patent of invention for 10 years which he obtained May 24, 1837, for a new windmill, applicable to all purposes where a powerful motive power is required, Nov. 14, 1838.

138. Menuau de Villeneuve, of Paris, rue Sainte Croix de la Bretonnerie, No. 22, a patent of invention and improvement for 10 years, for the use of Spanish reeds and broom, an exotic vegetable substance, equally well adapted to spinning and weaving, and to the manufacture of paper, Nov. 14, 1838.

139. Minary, Auguste, of Besançon, département du Doubs, a patent of invention for 5 years, for a new rotary pump, Nov. 14, 1838.

140. Potier, son, of Rheims, and Créténier, Pierre Alexandre, of Epernay, département de la Marne, a patent of invention and improvement for 10 years, for carding wool by steam-power, Nov. 14, 1838.

141. Regnier, Jean Pierre, of Ivry, département de la Seine, and Bougenaux, Etienne Désiré, of Paris, place de l'Oratoire, No. 4, a patent of invention and improvement for 5 years, for a means of obtaining, by condensing the vapors arising from the carbonisation of turf, muriate and sulphate of ammonia,

crystallised sal ammonia, and liquid ammonia, or volatile alkali, Nov. 14, 1838.

142. Richardson, Alexandre, Davidson, Robert, and Glaude, Edwards, address rue de Thionville, No. 4, à la Villette, precincts of Paris, a patent of invention for 5 years, for preparing all woods, and particularly white woods, for the manufacture of paper, Nov. 14, 1838.

143. Seguin, Jules, of Paris, rue Saint Julien le Pauvre, No. 11, a patent of invention for 15 years, for a new process for extracting gas for illuminating purposes, and for the apparatus used in the manufacture of such gas, Nov. 14, 1838.

144. Selligue, Alexandre François, of Paris, rue de Bondy, No. 60, a patent of invention and improvement for 10 years, for the application of mineral oils to illuminating, Nov. 14, 1838.

145. Taffin, Henri Joseph, rue de Beaune, No. 31, Belleville, precincts of Paris, a patent of invention for 15 years, for the manufacture of waterproof shoes, Nov. 14, 1838.

146. Villebouf, Barthélémy, of Paris, rue Neuve Saint François, No. 5, a patent of improvement and addition to the patent of invention for 10 years which he obtained Aug. 1, 1838, for a clock-work, called "mouvement Villebouf," Nov. 14, 1838.

147. Amerigo, Thomas, of Bordeaux, rue Entre deux Places, No. 167, a patent of invention for 10 years, for a new economical system of general navigation, producing constant, sure, and rapid sailing, without the use of fire, and which system can be advantageously applied to all kinds of vessels, Nov. 17, 1838.

148. Barthélémy, François, of Paris, rue Michel le Comte, No. 31, a patent of invention and improvement for 5 years, for an evaporating apparatus adapted to the manufacture of beet-root sugar, Nov. 17, 1838.

149. Bocquet, Guillaume, of Hirson, département de l'Aisne, represented at Paris by Reynaud, rue du Temple, No. 119, a patent of importation for 15 years, for an improved machine for cutting files, Nov. 17, 1838.

150. Mdme. Cellier Blumenthal, represented by her husband, address at Paris, Faure Beaulieu, rue du Ponceau, a patent of improvement and addition to the patent of invention for 10 years, which she obtained Oct. 5, 1838, for a complete system of extracting sugar from beet-root, by drying the pulp, as it comes from the press, after expressing from it at most 40 to 50 of juice, Nov. 17, 1838.

151. Combes, Charles Pierre Matthieu, of Paris, rue de Seine Saint Germain, No. 64, a patent of improvement and addition to the patent of invention and improvement for 15 years, which he obtained August 24, 1838, for a universal machine of central force, adapted to displacing liquids and aeriform fluids, and for communicating to them rapid motion, and also for turning to account the motile power of water and air in movement, Nov. 17, 1838.

152. Dauxert, Jean, of Commercy, département de la Meuse, a patent of invention for 10 years, for a machine for crushing barley without producing flour, Nov. 17, 1838.

153. Gaudichon, Pierre Médard, of Paris, rue Saint Sébastien, No. 5, a patent of invention and improvement for 5 years, for a means of making coffee without ebullition or evaporation, and of obtaining from the berry all its aromatic flavor, Nov. 17, 1838.

154. Gobert, Auguste, jun., of Lyons, Place des Célestins, No. 1, a patent of invention and improvement for 10 years, for a new kind of corsets, Nov. 17, 1838.

155. Ratié and Guibal, of Paris, rue des Fosses Montmartre, No. 4, a second patent of improvement and addition to the patent of invention, importation, and improvement for 15 years, which they obtained Sept. 16, 1837, for new application of caoutchouc or recomposed India-rubber, to various objects of art and industry, Nov. 17, 1838.

156. Ladense, Jean Baptiste Edward, and Simonian, Jules Napoleon, the former of Paris, rue Rochechouart, No. 23, the latter, rue des Poissonniers, No. 24, à la Chapelle Saint Denis, precincts of Paris, a patent of improvement and addition to the patent of invention and improvement for 10 years, which they obtained June 6, 1838, for an apparatus for promptly effecting the bleaching of long-sugar, by blowing on it compressed atmospheric gases, Nov. 17, 1838.

157. Pascal, Antoine Noel, of Paris, rue Sainte Appoine, No. 16, a patent of addition and improvement for 15 years, for improvements in the processes described in the patent of Feb. 3, 1838, for machines for manufacturing bricks, tiles, and artificial stones, smooth, or ornamented with figures sunk or in relief, Nov. 17, 1838.

158. Pichard, Louis Charles Alexandre, of Paris, rue Cadet, No. 13, a patent of invention for 5 years, for a new machine for dusting carpets, and other stuffs of all sizes, Nov. 17, 1838.

159. Quinquandon, of Paris, passage Sainte Avoye, No. 9, patent of invention and improvement for 5 years, for new processes of manufacturing carings, turned rings called "gouttières," Nov. 17, 1838.

160. Robiquet, Adolphe, and Tiget, Pierre, of Saint Malo, département de l'Ille et Vilaine, a patent of invention and improvement for 10 years, for the composition of a bitumen which they call "marmo silicieux," Nov. 17, 1838.

161. Mme Vedeaix, Paulin, of Toulon, address at Paris, Rattier and Guibal, rue des Fossés Montmartre, No. 4, a patent of invention for 5 years, for a new orthopédic means, which she calls orthopédic body of direct continuous and elastic extension, Nov. 17, 1838.

162. Adcock, Robert, of Liverpool, represented at Paris by Truffaut, rue Favart, No. 8, a patent of importation for 10 years, for a new mode of drawing water from the galleries and shafts of mines, Nov. 22, 1838.

163. Conté de Levignac, Jean Maria, of Paris, passage Vero Dodat, No. 33, a patent of invention for 15 years, for a new system of paring and a new artificial stone, Nov. 22, 1838.

164. Delfosse and Savoye do Belaimont, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of invention and improvement for 15 years, which they obtained May 12, 1838, for an improved drilling machine for distributing more or less strictly in a right line all kinds of grains and seeds, and which is applicable to sowing beans, horse-beans, kidney-beans, peas, and other similar vegetables, Nov. 22, 1838.

165. Ducom, Joseph, of Bordeaux, rue Mably, No. 3, a patent of importation and improvement for 15 years, for a new filter for purifying water, Nov. 22, 1838.

166. Dumas, Blaude, of Saint Chamond, département de la Loire, a patent of invention for 5 years, for a system of making use of the weight and tractice effort of animated motors, as also the weight and useful effect of a steam-engine, Nov. 22, 1838.

167. Duquesnoy, Pierre Edme, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of invention for 5 years, which he obtained August 16, 1838, for a marine screw, Nov. 22, 1838.

168. Edmen, Samuel, of London, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of invention, improvement, and importation which he obtained July 4, 1837, for a mode of treating the acid remaining after the purification of grain-oils for the purpose of recovering useful products therefrom, Nov. 22, 1838.

169. Fillon, Jean Gabriel, of Paris, rue Saint Martin, No. 112, a fifth patent of improvement and addition to the patent of invention and improvement for 10 years, which he obtained March 14, 1838, for

a new system of levers, called Fillon's levers, for the purpose of removing earth and filling up curvities, applicable to constructions, to commercial transport, to lading and unlading vessels, to railroads, &c. &c. &c.

170. Fourrouge, Antoine Catherine Adolphe, of Paris, rue Roussel-Saint Germain, No. 14, a patent of invention for 15 years, for a new method of building walls of baked earth, Nov. 22, 1838.

171. Gers, Jean François, of Derville, département de la Seine Inférieure, a second patent of improvement and addition to the patent of invention for 5 years, which he obtained July 30, 1836, for a system of printing by means of plates, whereby two, three, four, five and six colors may be printed at the same time; and which is applicable to the manufacture of cravats, printed calicoes, and generally of all printed fabrics of silk, wool, and cotton, Nov. 22, 1838.

172. Guillot, Louis, of Bourg, département de l'Ain, a patent of invention for 10 years, for a power-loom, for manufacturing velvets, velveteen and plain tissues of all breadths, in silk, wool, and cotton, Nov. 22, 1838.

173. Heulte, Théodore, of Paris, rue Pastourelle, No. 5, a patent of invention for 10 years, for felting all kinds of hair, wool, cotton, hemp, and silk, Nov. 22, 1838.

(To be Continued.)

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.

A new steam flour-mill has recently been erected near Bordeaux, and is already in full operation. Until the present establishment was formed, steam-mills were found objectionable, from the great expense occasioned by the consumption of fuel, which gave them thus little superiority, if any, over the ordinary wind or water-mills. M. Charrières, of that city, has realised, in this instance, a considerable improvement, in point of economy, over ordinary steam-mills. By constructing coke ovens on a large scale, he is able to obtain considerable profits from the sale of the produce, while the heat evolved is turned to account in generating steam for the service of his mill engines.

Four ovens are employed for the purpose of producing coke or charcoal; the first is exclusively used for calcining lime-stone. Two of the four above-mentioned are kept constantly at their maximum of action, while the heat of the others is declining. When the two first are beginning to decline, the latter are re-charged with materials, and heat is evolved in turn by these, so that the steam-engines have a constant supply of moving power. So great is the demand for the products of the combustion of these ovens, as well as for the flour of the steam-mill, that the fires are never extinguished, and a rapid fortune will probably be the result of the experiment.

In our number of the 31st March we stated, on the authority of an English morning paper, that a series of experiments were taking place in England, for the purpose of establishing the superior advantages of a steam ship of an entirely new construction. According to the description given in that paper, all the machinery is concealed within the keel of the vessel. It consists of a wheel, set in motion by steam-power, and acting upon a current of water, which enters under the bow of the vessel, and passes out under the stern; the effects of this combination is to increase considerably the rapidity of its progress.

One of our fellow countrymen, Mons. H. P. Hurel, was for four years occupied upon a similar invention, the model of which he presented the 6th of January last to M. Boucher, Inspector-General of Dockyards, in the employ of the Admiralty. The motor employed by Mons. Hurel is not a wheel, however, but another dynamic power to which he

attributes a still greater action. Whatever may be the analogy or the difference which exists between these inventions, we think it our duty to signalise their simultaneous coincidence.—*Journal des Débats*.

There is a question at this moment, of a new plan of colonisation for Algiers. An African company, whose privileges and statutes are to be analogous to those of the English East India Company, is to obtain as a property all the territory which the campaign just opened by Marshal Valée will add to the conquests of France. The legislative act, by which this concession will be ratified, is to determine the number of troops which the African company are to support at their own expense. These troops are, however, to be placed under the direction of the Minister of War.

The company's army is to be considered sufficient for the protection of the territory in times of peace, and will be only supported in war time by the government troops. Several of the first banking houses are engaged upon this project, and the court has expressed a desire that, if the negotiations succeed, and the plans be matured, the Duke of Nemours may obtain, under the title of *Viceroy of Algeria*, the marriage portion that was refused him in his quality of prince.

BELGIUM.

An association is in process of forming at Verviers, among some of the principal commercial men of that flourishing city, for the purpose of sending out a cargo of woollen cloths to *Singapore*; which, it is presumed, will prove an admirable mart for the sale of the staple manufacture of the place.

The first steps of the association are quite experimental, the capital being raised by shares to the amount of 100,000 frs. only; should, however, the expedition answer the expectations of the speculators, the capital will be very considerably augmented.

The only thing that remained to be done in carrying out the grand railroad system of Belgium at the moment of the late crisis, was to settle the line for the section between Charleroi and Braine-le-Comte, and the passage through the city of Mons. M. Notchomb's successor will have, notwithstanding this, a very arduous task, and it is sincerely to be hoped that he may possess the same brilliant qualities as his predecessor. This, however, is by no means to be depended upon as certain; Notchomb's abilities were immense; he continually astonished the very first engineers by the quickness with which he seized an idea, and by the extraordinary facility he showed in comprehending and developing the most intricate and delicate questions, while it was well known that his previous studies and pursuits could not avail him in the least during his ministerial career. No minister of public works ever left a more honorable name behind him at his secession from office; no minister ever deserved better from his country for his zeal, his patriotic ardor, or his indefatigable exertions.

When the above-mentioned sections shall be completed, the railroad system of Belgium, if not the most extensive or the most costly, will be one of the most gigantic enterprises ever undertaken by a constitutional government.

A voluminous Report by M. Notchomb, the minister of public works, upon Belgian navigation in the direction of Paris, and which was laid, not long since, before the Chamber of Representatives, has recently issued from the press. It contains 330 folio pages, with a number of maps and tables.

The object of the Report is to establish an equilibrium in the rival pretensions of Mons and Charleroi, by rendering the new canal line from Paris to Charleroi common, also to Mons, either by means of a railroad between the above canal and the works near the latter city, or by means of a junction canal to unite the same to the canal of Mons. The last method would connect at the same time the valleys

of the Meuse and Scheld. All the researches necessary to the elucidation of the subject, and to the success of a measure of such vast importance, are printed with the Report.

The junction of the waters of Belgium with those of France, is a great event for both countries. But a junction of the above rivers with the Rhine, is so essential to the commercial and manufacturing interests of Belgium, that there is no doubt that very shortly a canal will be projected, to connect this country with the valley of the Rhine, as it at present is with the valley of the Seine.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

THE RAILWAY TERMINUS AT GREENWICH.—The trains run under a shed of sixty feet span, having twelve feet of pavement on each side, forming a promenade 300 feet in length, eleven large windows looking into the London-road, and the same number giving a view towards the Thames. On the roof, at the end of the shed, is a large leaden tank, containing 25,000 gallons of water to supply the engines; and above the shed, a weather-cock, representing a locomotive engine; the beams and iron stays which sustain the roof of the shed, are of prodigious strength, and weigh each four tons; of these beams and stays there are twenty-two in number, weighing together eighty-eight tons, lined inside and out, and covered with slate and zinc. A handsomely finished stone staircase, ten feet wide, leads to the waiting rooms, and down about twenty stone steps into a colonnade, through which the passengers pass into the London-road, Greenwich. There is an entrance for first class passengers, and separate ingress and egress for second-class passengers. First-class waiting room, is twenty-nine feet by eighteen, with windows overlooking Blackheath, the park, and London-road. The second-class waiting room is sixty feet by thirty, with six large windows, and a chandelier of bronze having six large burners. The pay office is convenient and roomy, being thirty feet by forty, and twenty feet high, suitably fitted with large counters. The passengers, on paying, receive metal tickets, and pass through a turnstile or indicator up a stone staircase to the covered promenade, where the trains await them—those from London pass down another stone staircase into a colonnade below, and out into the London-road, on the left hand side. There are three large rooms for the company's offices; a convenient water-closet for first-class passengers. The doors of the waiting-rooms run into the wall upon a new principle, and are well adapted for such a building. The front of the building will be surrounded by the arms of the City of London and Kent, united.

DUBLIN AND KINGSTOWN RAILWAY.—Last week, the general annual meeting of the proprietors of this company was held in Dublin, HENRY ROE, Esq., in the chair. . . . Mr. PIM, the treasurer, read the report of the directors, by which it appeared, that, owing to the very unfavorable weather during a large portion of the last summer, there had been a trifling decrease in the number of passengers and in the receipts. In addition to this cause, the company had been deprived, by the discontinuance of the Kingstown races, of from £600 to £750 of gross income, which they had enjoyed for several years previous. The directors, however, anticipated a considerable increase of revenue during the next year. The traffic statement embodied in the report, exhibited a decrease in the revenue of the company during the past year, as compared with the preceding year, of £133 17s. 6d. The relaying of the road on longitudinal wooden sleepers was nearly completed, and, from the increased speed at which the engines were now able to travel, the board expected to be able, in the course of the ensuing month, to start the trains from both ends of the line at the same hours, by which the ordinary daily work would be accomplished by three engines instead of four, as at present. The full amount of capital having been called up, the company were now in a

position to borrow such sums of money as they might require under the act of parliament. The statement of accounts exhibited a balance of £6,894 14s. 1d., after payment of the terminable annuity of £6,000 to the Commissioners of Public Works, and of interest on other loans. From this sum the board recommended that £814 13s., being one-eighth part of the net profits for the year, should be added to the contingent fund, and that from the remaining balance a dividend of £3 per share be made to the proprietors. The report having been adopted, a lengthened discussion ensued on the subject of making a reduction in the rate of fares. One of the results of the late increase, had been that the public preferred travelling by other conveyances, while a large decrease had taken place in the number of second-class passengers, most of the latter having gone by the third class; thus causing a serious loss to the company. It appeared that on the year, the increase in the number of passengers had been 4,214 by the first-class, and 68,249 by the third-class: while, in the second class, the falling off had amounted to 80,658. The Chairman said, that as the late alteration in the rate of fares had been carried by the English proprietors, and as he did not see a single English proprietor present, or his representative in the room, it would be, in his opinion, indecorous to proceed with the discussion, or to come to any conclusion in their absence; he therefore suggested an adjournment to another day, in order to give the parties to whom he adverted an opportunity of discussing the subject at issue. The meeting ultimately decided on adjourning to Wednesday the 15th May, for the special purpose of considering the rates of road traffic.

A VISIT TO THE GLASGOW, PAISLEY, AND GREENOCK RAILWAY.—In July last, we made a hasty excursion along the greater part of the railway between this and Paisley, and on our return laid before the reader a brief account of what we had witnessed. At this distance of time, we do not pretend to recollect the exact states of forwardness in which the different stages of the undertaking then were, but we retain a vivid impression of the vast amount of work which remained to be performed. Indeed, as we stated at the time, it was only by looking to the amount of work already accomplished that the uninitiated could be led to imagine that what remained to be done could be finished before the lapse of several years. Last week, we paid a second visit to the line, and as on the way we reflected on the unfinished work, when last there, and on the most unseasonable weather which had prevailed from shortly after the date of our previous trip till within the last two months, we entertained many forebodings as to the position in which we should find matters. The result showed that such fears were without foundation, for under any circumstances the progress made would have been satisfactory, but, when the state of the weather is taken into account, it was truly surprising. The banks are now joined between Cartburn Hill and Port-Glasgow, and from Ladyburn to that town the permanent rails are laid on both sides. We know not what aspect this part of the line may wear to a spectator hurried along at the rate of twenty-five or thirty miles an hour at the tail of a locomotive engine, but to a pedestrian proceeding eastward, the view from this side of a handsome bridge, which crosses the railway a little beyond Ladyburn, is very beautiful. In our former notice, we remarked at some length on the splendor of the scenery, visible in the drive from Bishoppton to Port-Glasgow, but we had no idea of the existence of such a beautiful "fairy nook" so much nearer home. In July last, the eastern extremity of West Ferry rock had just been so far broken through that daylight was visible on the other side. But the bottom and sides of the whole cut were rude and unfinished, and many thousand tons of rock required to be removed ere the way was at all practicable. Now the railway is completely formed all along this part, and a locomotive engine traverses it several times every hour, with trains of wagons laden with earth and rocks from Bishoppton Ridge, for a distance of upwards of a couple of miles, to join

two embankments which are rapidly approximating and whose close will unite several miles of the line. The great work on the line is, and always has been, Bishoppton Tunnel, which is progressing with great rapidity. The "Eye," which has been very appropriately named after the spirited sub-contractor, Mr. Femmister, who formed it, is a most stupendous piece of work. When we last visited it, it was sixty-five feet deep, but now it is down the full way, and goes seventy-five feet below the surface. When we add that it is 300 feet in length, and forty-five in width, and that this immense cutting has been made through solid whin, some idea may be formed of the vast quantity of labor expended upon it. On either side of this "fearful pit," the tunnel extends about 1,000 feet, and at each of the four "faces" which it presents, three separate "gangs" of men are engaged. Each gang is employed eight hours out of the twenty-four, less one hour for rest and refreshment, so that these faces are all worked twenty-one hours each lawful day. From the two within the "Eye," full thirty-tons of rock are raised every hour, being at the rate of 630 tons per day, or 3,780 per week. The other two faces of the tunnel will produce at least as much, so that between 7,000 and 8,000 tons of rock are excavated from the tunnel weekly. At both ends of the tunnel, those parts of the hill which are to be removed entirely, are rapidly disappearing. Mr. Mackenzie, the contractor for the whole of this part of the line, has been multiplying his "faces" in order to expedite the work, which has made great progress since we saw it last. Barangry Hill too is quickly melting down before the stalwart laborers who are employed upon it, and in every quarter where skill and strength can be brought efficiently to bear, neither are wanting. Upon the whole, while it is at all times dangerous to predict positively of any work which, having to be performed in the open air is subject to the retarding effects of the "skiey influences," we are sanguine in our expectations that the promises of the directors and engineers will be fulfilled, and that the ensuing summer will put it in the power of the inhabitants of Greenock to reach Glasgow in a journey of forty-minutes.—*Greenock Advertiser.*

PNEUMATIC EXPERIMENT ON THE BIRMINGHAM, BRISTOL, AND THAMES JUNCTION RAILWAY.—The engine-house is built, and the communicating tube between it and the railway, by which the exhaustion of the main tube is to be effected, is nearly laid. The permanent way and rails are also almost completed, and fit for the laying down of the tubes for a considerable distance out of the 1½ miles on which the experiment is to be made. We perceive also that a great many of these tubes are already arrived and on the ground. They are nine inches diameter, and are lined inside, to about the tenth of an inch thick, with a hard unctuous substance, much resembling, in its disagreeable and suffocating smell, hard tallow. The slit or aperture of the tubes through which the arm communicates with the running piston, and the carriages, is about 1½ inch. We understand, if the experiment be successful, the Company are to have the use of the patent, gratis, for devoting the road to the trial, and are to purchase the whole apparatus and preparations at cost price; and if it does not succeed, all is to be cleared off within a given time. Supposing the experiment effects all that its advocates expect, we cannot see the use of so small an apparatus in such a place. If we remember right, the inclination of the road, about that part, is 120 feet a mile; therefore, the traction is more than three times that on a level, or above 24 lbs. to the ton. But a circular tube 9 inches diameter, fully exhausted, and exclusive of all friction, would only draw about 954 lbs. or, at 24 lbs. per ton, under 40 tons. The probability, however, is, that it will never in that length be half exhausted; so that the absolute load it would take would be under 20 tons, carriages, load, and all, assuming a perfect absence of all friction in the machinery. We shall, however, be much surprised, if the useful effect is anything like this. Our opinion is, that the patentees have made the apparatus much too small for any useful purpose upon such a road, and also for the purpose

of showing off the invention well, assuming it to be all that can be expected of it. A few days ago, the works were suspended, in consequence of a dispute between the Messrs. Samuda and the contractors, about the point of delivery of the tubes—that is, whether it should be a few yards on the north, or a few on the south of the crossing of the Great Western line. Where so much is involved as here, this dispute is equally ridiculous as that of the Lilliputians and their neighbors, about which end eggs ought to be broken.

PORT DYNLLAEN RAILWAY.—The Government Commissioners, Sir. J. Smith, K.C.B., and Professor Barlow, appointed to report on the best line of railway between London and Dublin, have completed their survey from the seaboard terminus to Worcester, having been accompanied from Dynllaen to Newton by Mr. Newnham, and from thence to Worcester, by Mr. Varden. The Commissioners arrived in that city on Thursday, and, having surveyed particular points on the line in this neighborhood, have set off to complete their inspection of the remaining portion—from hence to Dulect. Mr. Brunel, chief engineer, and Mr. Bennett, surveyor to the Great Western Railway, accompany the Commissioners along this portion of the line. Thus there is every prospect of the Commissioners speedily giving in their report; and although, as a matter of course, nothing has yet transpired, in reference to their opinion of the line, we are glad to be able to say, that neither has the existence of any insurmountable obstacle come to light, or anything else occurred to alter the belief of its promoters, that the imperial line is the best that can be found between London and Dublin.—*Worcester Herald.*

BRISTOL AND GLOUCESTER RAILWAY.—COAL-PIT-HEATH LINE.—The annual meeting of this company was held at Bristol, on Tuesday week, G. JONES, Esq., chairman of the board of directors, presided.—Mr. FLETCHER, the secretary, read the report. It adverted to the differences which had arisen with the coal owners as to the terms on which the company should carry coals on the line, and the loss which the temporary suspension of the traffic had caused, but a satisfactory arrangement had been come to, and the traffic was progressively increasing. The committee were in a position to declare a dividend on the half-year ending the 31st of December, at the rate of five per cent. per annum. The act of parliament empowered the company to extend their line to Gloucester, but in doing so, care would be taken to keep the affairs of the Coal-Pit-Heath Line distinct. By the financial statement, it appeared that the balance on the 1st of January, was upwards of £2,500; the receipts to the 30th of June had been £1,525 9s. 7½d.; and from that time (increasing every month) to December 31, £2,318 2s. 2d. The expenditure left a balance of £1,160 8s. 8½d., on which the dividend was founded. The report gave much satisfaction to the meeting, and was unanimously adopted. Thanks were then voted by acclamation to the committee, which having been acknowledged by the chairman, the meeting separated.

The Netherlands Steam Navigation Company in Rotterdam, solicited a short time since, and has just obtained, an authorisation to construct a Railway from Rotterdam to the Hague. The same Company intend to form a branch railroad, to connect the above with the Railway from Amsterdam to Harlem.

The number of passengers on the Railroad from Amsterdam to Harlem during the month of March, amounted to 15,766, affording merchandise included, a return of 8,062 florins; the returns for the two preceding months, amounted to 13,737 florins. So that the total receipts for the quarter, amount to 21,799 florins.

BELGIUM.—The exact line, as well also as the inclination of the planes for that part of the eastern Railroad comprised between Pepinster and the Prussian frontier (passing through Verviers), were definitely settled, and received the royal approbation on the 15th of last month. The works are proceeding in consequence of this, with the utmost rapidity.

The movement on the Belgian Railroads for the month of March, is stated by the *Moniteur*, as follows:—

Passengers 136,620; viz.—16,335 in diligences, 43,000 in chars-à-banc, 50,720 in 1st. class wagons, and 24,795 in 2nd class ditto; the number of troops transported by the Railroads, amounting to 1,009. The receipts are estimated at 346,838 francs. The weight of passengers' baggage was 441,970 kilograms, that of merchandise 7,368,000 kilogrammes, producing a receipt of 85,147 francs.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

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TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSOON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, APRIL 18, 1840.

THE present state of our relations with China, gives rise to the consideration of the general law which is presumed to regulate the intercourse of one civilised nation with another; and also to the further question, whether China has not by her general conduct to other nations outlawed herself.

The law of nations, we are told by Blackstone, is founded on this principle, that "different nations ought in time of peace to do one another all the good they can, and in time of war as little harm as possible, without prejudice to their own real interests. And as none of these states will allow a superiority in the other, therefore neither can dictate or prescribe the rules of this law to the rest; but such rules must necessarily result from those principles of natural justice in which all the learned of every nation agree; or they depend upon mutual compacts or treaties between the respective communities, in the construction of which there is no judge to resort to but the law of nature and reason, being the only one in which all the contracting parties are equally conversant, and to which they are equally subject."

The Chinese have never recognised the principles of this law, and instead of entering into a compact with other nations, for their mutual benefit, they have kept themselves apart from the rest of the world, and have treated the inhabitants of other countries with the most marked contempt and indignity. The sovereign of the "Celestial Empire," swelled with his own importance, and imagining himself far above the rulers over the "barbarians" in other quarters of the globe, has been accustomed to consider the permission he grants to those "barbarians" to trade with his subjects as a condescension for which they ought to feel themselves under great obligation. The whole of our intercourse with the Chinese has, indeed, been conducted upon a system of humiliation on our part that



is utterly degrading to an independent state. It is against the continuance of such an intercourse we feel bound to protest, as unworthy of Englishmen; and we trust that the result of the hostile demonstrations we are now making, to avenge an insult of more than ordinary atrocity, will be the means of establishing the trade with China on a more honorable basis, or of breaking it off altogether.

It is a question of much interest how far any one nation has a right, during time of peace, to exclude the inhabitants of other countries from participating in the products of its soil, or from entering its territory. The rule that property has its duties as well as its rights is applicable, in an enlarged sense, to nations as well as to individuals. The right of any individual to appropriate to his own use a large portion of the soil, to which every one has an equal natural claim, depends upon a conventional arrangement, which has been found to operate for the general good. But if this right were to be flagrantly abused, the nation would interfere, and deprive the possessors of their inheritance. If, for instance, several of our largest landed proprietors were obstinately determined their estates should run to waste, and a large portion of the most fertile lands were thus turned into a desert, the people would interfere, and resume the possession of property which was originally appropriated on the understood condition that it should be cultivated for the good of the whole community. When an individual case of this kind does occur, the relations of the party interfere; he is declared unfit to manage his property, and it is consigned to the care of others. The relations in this matter act on behalf of the public as well as themselves, and by this convenient arrangement, those revolutions in property that might otherwise occur, are wisely prevented. The same principle, we contend, should operate on a more extended scale, and if a nation, like the Chinese, obstinately shut itself up from the rest of the world, and refuse to enter into friendly intercourse with any other states, or to permit them to participate in the products of its soil, except on terms too degrading for compliance, it is then justifiable in those states to combine and enforce their natural rights.

It is only on the principle for which we have been contending, that the expulsion of the North American Indians from their hunting grounds can be justified. If they refuse to cultivate the land themselves, their right, as original possessors, is subverted by the more

general and natural rights of those whose increasing numbers require a larger produce from the earth. The encroachments of civilisation on the wilds of the Indian savage, cause, indeed, a sensation of pain at the consequent gradual extinction of that race of men; and we cannot suppress a feeling that to drive them from the land of their fathers is cruel and unjust. In the case of the Chinese, however, there are no sympathies to restrain the full operation of the rights of nations. Inflated with ideas of their own importance, and insulting in their conduct, they seem to invite correction, and no one would regret to see them thoroughly humiliated.

In these observations, we exclude from our view all considerations of the origin of the present hostilities. Whether or not the Chinese authorities were justified in suddenly prohibiting a trade at which they had long connived, or whether the conduct of the British authorities was just and expedient, is not the subject we proposed to consider, but the question is, whether China has not, by her general policy and demeanor to other nations, placed herself beyond the pale of civilisation, and whether it is not justifiable to compel her to adopt a less exclusive system.

CAPABILITIES OF THE VELOCIPED.

The Velocipede, which threatened on its introduction to annihilate the simpler mode of pedestrianism, has almost ceased to be heard of. It had a career as brilliant, and of about equal duration, as the Kaleidoscope; their departure into oblivion was as rapid as their popularity. This sudden transition is generally the fate of any new invention that takes the public by surprise, and springs at once into notice. The great expectations that are excited by the novelty of its operation are disappointed, and in consequence the real merits of the discovery, if it possess any, are overlooked, and it thus falls into obscurity. Years, perhaps, intervene before the subject is again revived, and then when it is brought under consideration in a more sober spirit, and with less sanguine expectations, its valuable properties may be rendered available. We anticipate that this will be the case with the velocipede, and therefore it is we wish to rouse the attention of ingenious minds to the consideration of that invention, with a view to make it practically available as a means of locomotion.

The principle of the velocipede appears to be decidedly good; and it only requires an

adaptation to receive the propulsion of the muscular power of the legs in the most advantageous manner, to bring it into general use. In walking, a man supports the whole weight of his body on his feet, and lifts that weight, and propels it along, at every step. He works also with the disadvantage of checking the impetus with which his body moves each time his foot touches the ground. In the velocipede, the whole, or nearly the whole, weight of the body is supported by the axles of the two wheels, and the impetus once given to the body and the machine, is unchecked by any sudden concussions, as in walking. A man balanced on a velocipede and set in motion on level ground, would continue to move without any further exertion on his part, were it not for the obstacles arising from the unevenness of the road, and from friction. When this mechanical advantage is considered, it seems extraordinary that the velocipede does not, in practice, render more assistance than it really does, even as at present constructed. It has been found by gentlemen who have used this machine in making long journeys on common roads, that when the road is good and level, the rate of five or six miles an hour can be maintained, and the distance accomplished with much less fatigue than in walking. With rough roads, though level, the velocipede is of no use; in ascending a hill also, even when the road is good, the advantage is in favor of walking; but in all descents the *velocipeder* obtains great advantage, as he is carried down without any exertion on his part, beyond that of balancing himself on the machine. By using the velocipede, therefore, on level ground, and good roads, and in descents, and by walking it up hill, or over rough parts of the road, the advantage in a day's journey preponderates greatly in favor of its use; for persons who would be unable to walk thirty miles in a day, without great fatigue, have, by a judicious application of this machine, accomplished that distance without experiencing much inconvenience. An advantage to this extent, obtained by an instrument which had been just invented, shows that it possesses properties capable of being made generally useful; and that it ought not to be laid aside because it failed to answer the sanguine expectations that it first excited.

The principal cause, we believe, of the sudden decline in popularity of the velocipede, was owing to the impression that its use had a tendency to produce internal injuries. It is probable that it might have this effect when used by inexperienced persons, who exerted themselves violently to propel the machine

with great velocity. But allowing this to be the fact, it only shows the necessity of improving the velocipede, so as to remove this danger; and the objection should not be urged as an argument for its suppression. By a better contrivance of the seat, and of the means of applying the muscular force of the legs, all danger of the kind alluded to, might, we conceive, be effectually removed. To this point, therefore, it would be necessary to direct attention, in the first place, in attempting any improvements in the velocipede. The adaptation of anti-friction wheels might also be made with singular advantage in a machine of this kind, wherein one wheel only is attached to each axle. Were the velocipede to be so improved in its action as to remove all impression of danger from its use, and were the propelling advantage to be increased, it would be very generally employed as a means of locomotion for short distances. In that case, the public convenience would require that the foot-paths should be paved with smooth flag stones, or that suitable iron rails should be laid down on all the principal roads. If such facilities were afforded, the velocipede would become available as a most useful, economical, healthy, and delightful mode of accomplishing short journeys. With such advantages in prospect, and capable of being realised, the invention well deserves to be revived, and to be anxiously considered, with a view to making improvements that may obviate objections to its use and increase its efficiency.

NEW INVENTIONS.

PATENT BEEFING PADDLE-WHEELS.

A few days since, Mr. Hall, the inventor of this new and useful quality in steam machinery, invited a large party to visit the Lee steam-barge, and take a trip on the river to inspect this novel application of "reefing," and to witness its practical fitness for the intended object, which is one of much importance as regards nautical steam machinery. The Lee is a barge of about 100 tons, which has been temporarily fitted up with a pair of these paddles, each 14 feet in diameter, and two engines, each of 12-horse power. The barge was loaded with from 70 to 80 tons of iron ballast, which brought her down pretty low in the water (rather more than five feet), for the purpose of trying the reefing action of the machinery. One or two members of the Board of Admiralty were present, and some scientific gentlemen, whose opinions would be of much greater value in these cases than those of any of those official "lords" who condescended to be present on this trying occasion. The vessel left the Greenwich Pier at one o'clock, and was to return at two, as per previous arrangement, to take on board some other scientific and literary gentlemen, who had been specially invited to this experiment; but the Lee, in returning from Blackwall, forgot to call at the pier to take in those gentlemen, and "the lords" no doubt, having had their trip, and being of

course most heavily pressed with the weight of their occupations, thought it a clever thing to be carried into town without delay, which was done, whilst the scientific men were left to the care of a fierce snowy northwester, on the unsheltered pier of Greenwich, for more than three hours, if they chose to remain so long. With respect to the reefing action, it appeared to succeed very well in the river, the engineer had the power of raising (reefing) and lowering the paddles, according as the vessel was deeply or lightly immersed in the water. The advantage of this power, it will be perceived, must be very great, for we all know that heavily laden steam vessels in a heavy sea, often have their paddle-wheels so much encumbered with water, that they getlogged, particularly the leeward paddle, so as to be almost or altogether useless. Now, by the contrivance before us, this impediment can in a great measure be remedied, if not entirely obviated, by the application of this new machinery, which gradually lifts the paddle-wheels to the elevation required, to disencumber them from sea pressure, and give them the power of keeping strong headway on the vessel; and afterwards when the vessel is light and her paddles only skim the water, the same leverage and cogged wheels are put into activity, and the paddles descend into the water to the depth required. If, therefore, they can be made to work as effectively at sea as in a river, we think this will prove to be, for commercial purposes, a very useful and desirable invention.—*Post.*

ON DYNAMOMETRY.

"On Dynamometry, and on two Dynamometrical Rotatory Apparatus, by M. Morin. A paper read before the Academy of Paris."

The author after having shown that, at a period like the present when mechanical arts have arrived at such importance among manufacturing nations, mechanical power ought to be capable of measurement and of exact appreciation, cites a number of attempts made by various learned men to obtain instruments calculated to supply this desideratum.

Without directing particular attention to the Dynamometrical apparatus which he has already executed, and for which he has received from the Academy the prize in mechanics, he points out a very remarkable result, which he has recently obtained, by coupling two pairs of metallic plates, in the form of those which he is in the habit of employing, and which proves that two elastic plates when submitted together to one and the same effort, divide mutually the resistance in the exact ratio of their flexion, or their strength.

He invites the attention of experimental Dynamists to the interesting researches yet to be carried on into the action of ploughs, and the towing of boats, and mentions a number of comparative experiments of this kind made in the environs of Metz, with the common plough of the country, and the plough as improved by Dombasle; from which it appears, that in light land the latter offered a resistance equal to three-fourths of that opposed by the first.

The author terminates his notice, by announcing a problem, which he has proposed to resolve in the construction of two new rotatory Dynamometers, which he begs of the Academy to appoint a commission to examine. One of these instruments is destined to indicate during a number of revolutions, varying from 150 to 450 and upwards, the quantity of power, and the mean effort transmitted by a motor to a machine, with all its variations; this apparatus being so constructed as to be able to perform its functions while the machine is in action, without endangering its structure, and to be applied, as the case may require, to one or several machines; as well, also, as to be transported from one to the other without necessitating any alteration.

By the aid of this instrument, an engineer may study and determine directly the quantity of power necessary to propel divers pieces of mechanics, whether separate or working together.

The second apparatus, intended to continue in

action during a given time, whether for a day, or for a week, or fortnight, is to calculate the total quantity of power transmitted by the motor, and consumed by the machine; and this in such a manner as to give the results on a dial-plate, which is enclosed in a box provided with a double lock, to prevent the index being altered. Such an instrument placed in a manufactory, would indicate the actual power employed by the occupier, and would necessarily serve as an incontestable case for calculation in the letting of premises provided with machinery. Applied for a fortnight, or a month even, to a steam-engine, it would prove, in the most exact and absolute manner, the quantity of power generated by it from every pound of fuel.

The apparatus in question indicates in every instance, and with the most positive exactitude, the quantity of power employed; it is of so simple a construction, that a man, with the degree of knowledge common to every intelligent workman, may comprehend and apply it practically.

M. Chaussenot, senior, civil engineer of Paris, and one of the competitors for the prize of 12,000 frs. offered by the French government for the discovery of a means to prevent the explosion of steam-engines, has just retired from the lists, in order to preserve the patent of invention he has just taken out for the object in question. The means employed by M. Chaussenot, appear well conceived, and calculated to execute their various functions with certainty and precision. The regularity of their mechanism has been attested by commissioners specially appointed to examine the apparatus, who on various occasions saw it in full activity. For two years past, this apparatus has been constantly employed on the engine boilers of M. E. Phillips of Paris, so that its character is now fully established. Although M. Chaussenot has withdrawn himself from the *concours*, he has not been unrewarded by the commission, who have thought fit to present him with their great gold medal.

VARIETIES.

Aerostatic Society.—The second meeting of this society took place at the Polytechnic Institution on Tuesday, and received an accession of two scientific members of committee. On this occasion a printed prospectus was circulated, to be taken into consideration at the next meeting after Easter. It suggests many admirable experiments in different branches of meteorology, electricity, galvanism, and magnetism, atmospheric temperature and pressure, the theory of aerial currents, terrestrial radiation, and such other subjects as the "balloon," or, more scientifically speaking, the "AEROSTATE" is peculiarly adapted for—and without which it would be impossible to experiment successfully in the higher altitudes. M. Biot, Gay Lussac, and the most distinguished scientific men in England, advocate these ascents as indispensably necessary to obtain a correct barometric formula, or a correct theory of astronomical refractions. With these objects in view, "aerostation" becomes a science of the utmost importance.

The house in the Rue de Richelieu, in which Molière died, was sold last week by public auction. The bidders were so numerous and spirited, that, although put up at 150,000 francs, it was knocked down at 220,500 frs.

We are informed by the *Semaphore of Marseilles*, that Mr. Villeroi, civil engineer, and one of the directors of the Royal Sugar Refinery of Greece, has just embarked from that port, on board of the Leonidas, with a little colony of French artisans and sugar-bakers, to commence operations there forthwith.

Considering that the Thames Tunnel, when completed, will have cost less than the construction of Waterloo Bridge, a Mons. Desiré Tictach has proposed to the City of Antwerp, to unite the two, of the Scheld by means of a tunnel, at the £4,000; be it understood, for foot passenger.

He proposes founding a vast iron cylinder to be laid down upon the bed of the river, the entrance to which is to be effected by two wells to be bored on either side of the Scheld, to be provided each with a circular staircase in cast iron. This would be very easy if the bed of the river were found to be perfectly level, or if the Scheld, like the Vistula at Dantzig, would be so obliging as to take a new route until the work could be completed.

Nothing is more erroneous than to suppose that Russia is deficient in manufactures. Long before the reign of Peter the Great, this country was celebrated for its leather, sail cloth, cordage, cutlery, felt, soap, &c. The reigns of Peter I., Elizabeth, Catherine II., and Alexander, were the most memorable for the march of industry in that country, until the accession of the present Emperor, since which time there has been, not only a constant increase of manufactures, but the quality of all manufactured articles has remarkably improved. In 1812, throughout the empire there were not more than 2,332 manufactoryes, and 119,093 workmen; in 1828, the former had increased to 5,244, the latter to 255,414.

For some evenings past, crowds of persons have assembled at the corner of the Rue de la Chaussée d'Antin, to admire the magnificent saloons recently opened by the proprietor of the Café Foy. The embellishments of this new café are of the most sumptuous description, but the most attractive object of the whole is the new method of lighting of M. Robert, which on a first inspection, in consequence of the light and elegant forms of the chandeliers, is mistaken for gas. In the grand saloon there are twenty of these beautiful burners, and twenty others in the laboratory, (as the kitchen is called in Paris) and other offices, all of which are alimented by one reservoir placed in the back part of the premises. This reservoir requires filling but once in several months, and distributes oil to the above 40 burners, and to ten more, which we forgot to mention, placed in other apartments. In the grand saloon, the oil which descends from the ceiling to the chandeliers, after having alimented the wicks, returns to the common reservoir, and is constantly replaced by a fresh current; in the other parts of the building, some of the burners are placed before looking glasses, the rest are moveable and articulated like gas branches, but nowhere is there the slightest indication of the presence of oil in the production of this splendid light. The economy in this method of lighting is said to be immense, and besides the great advantages accruing from a soft, clear, and steady flame, the public are exempt from the inconvenience attending the combustion of gas or ordinary oil lights, and the most splendid painting and gilding remains uninjured.

The launch of a first rate man-of-war, the *Friedland*, has just taken place at Cherbourg. Her keel was laid in 1811, so that she has been nine and twenty years constructing, and consequently exposed to every vicissitude of this troubled period of history. She was named after the battle of Friedland, which brought about the famous interview of the Emperors on the Niemen, and led to the peace of Tilsit. On the birth of the King of Rome, her name was changed for that of the heir presumptive of the imperial crown. The reverses of 1814, and the abdication of Bonaparte at Fontainbleau, having replaced the Bourbons upon the throne of France, the name was again painted over, and the word "Inflexible" substituted. Napoleon, however, escaped from Elba, and arrives on board the *Inconstant* at Cannes, when the sight of the *petit chapeau* and *redingote grise* suffices to throw broad rebellion into the ranks of the entire army. The new baptismal name was of course now scraped out, and *Roi de Rome* restored. After the disasters of Waterloo, the *Roi de Rome* was once more daubed over, and the title of "Inflexible" again appeared on the brow of the Colossus. Five years later, the posthumous offspring of the unfortunate Duke de Berry gave his name to the man-of-war, the "Inflexible," which, not having had baptisms enough, was to receive one more, and be called the *Duc de Bordeaux*. At length in 1830, the elder branch of the Bourbons being expelled from the French soil, the vessel

changed her name for the 7th time, and became once more again the *Friedland*, hoisting the national tricolor. This was the last baptism. She is the most magnificent vessel of the fleet of France, and mounts 126 guns.

The contract under which the Neapolitan government concedes to the French company the monopoly of the sulphur trade of Sicily, is only for a short period; ten years. The revenues to be derived by the company from this speculation are expected to be immense, since they are authorised to impose an export duty, which it is calculated will produce 1,200,000 ducats (£200,000). But on account of the heavy charges which fall upon the sulphur company, their revenues will not in all probability be such as to militate against any portion of the general interests, or affect the reciprocity of advantages which with great justice and liberality the Neapolitan government has desired to establish, and has an unquestionable right to see respected. In the first place the company are required to pay, in the nature of a quit rent, one third of the export duty, or 400,000 ducats; in the next, 120,000 ducats to the proprietors of the *solfatara*, by way of indemnity for non-production. They are obliged by their treaty to have always in their storehouses, a reserve of 200,000 cantari of sulphur (1,600,000 tons), and must make advances to those producers who furnish proper guarantees, equal to one-third of the entire production to which they are restricted by the terms of the charter, for this reason they are compelled to work upon a capital of £240,000. They are likewise compelled to contribute to the advancement of Sicily in matters of industry by creating an establishment for practical chemistry, in order to form the native youth for this species of enterprise. All the expenses of surveillance and levying duties, are likewise at their charge. Lastly, they are exposed to all such contingencies as are liable to occur in a speculation wherein from 200,000 to 240,000 pounds are annually laid out in a produce, the consumption of which although sure, and likely even to be progressive in the ordinary course of things, may from a combination of peculiar circumstances receive a severe if not a fatal check.

ARTIFICIAL INCUBATION;— THE ECCALEOBION.

The re-opening of this instructive and pleasing exhibition, affords us an opportunity, which we have long proposed to avail ourselves of, to offer a few remarks on the process of Hatching Eggs by Steam, a project which bids fair to be carried out in this country to a considerable extent.

Hatching the various tribes of gallinaceous birds by artificial means, has long been practised in several eastern countries, particularly in Egypt, where, from time immemorial, the greater portion of the poultry consumed is thus produced. It is, however, by no means well executed; one third of the eggs invariably fail, and of the remainder full one half of the birds brought into existence perish in the endeavor to rear them. As food for the table, they are of inferior quality.

Similar attempts at artificial incubation have been made in Europe, particularly in France; but with very partial success, not indeed sufficient to render it of any practical use in increasing the supply of human sustenance. These failures seem chiefly to have arisen, from the impossibility of controlling with sufficient accuracy the temperature administered to the eggs by the apparatus employed; and from the extreme difficulty of making a sufficient number of experiments upon so delicate a subject, with any certainty that the result will discover a general law in the development of life.

These facts we shall endeavor to explain, as also the recent important discoveries of Mr. Bucknell, the proprietor of the Eccaleobion, 121, Pall Mall, where this interesting subject is exhibited for the amusement and instruction of the public.

The opinion hitherto entertained upon the sub-

ject, viz., that to a successful development of life, all that is required is the application of warmth, as nearly as may be to the temperature of the parent bird, is erroneous. That a correct temperature is necessary, is perfectly true; but if this condition only be complied with, a very unsuccessful hatching will be the result. The other conditions necessary, are, moisture and the admission of fresh air; and these vary in quantity according to the peculiar species and habits of the bird whose eggs are operated upon.

It is evident that the bird can only communicate to the egg the precise temperature which its surface skin indicates; never for a single moment can she go beyond it. In all attempts preceding those of Mr. Bucknell, an average temperature has been given, a few degrees above and a few degrees below; because the means made use of would not give the required warmth with any greater accuracy. The consequence was, that when heat was in excess, it occasioned an unhealthy excitement in the system of the nascent bird; and when deficient, the vital energy proceeded languidly; so that no perfect maturation was produced, and the greater number perished in the shell.

At the Eccaleobion, the required temperature can be given for any length of time, without increase or diminution, to the 100th part of a degree. This grand difficulty, hitherto insurmountable, has been overcome by Mr. Bucknell's ingenious apparatus, and the master-key of a treasure, hitherto lost to Europe, is now discovered, and rendered available to increase immeasurably the means of human subsistence.

Next to a correct temperature being administered, the hygrometric state of the atmosphere must be attended to; and this varies according to the species and habits of the bird whose eggs are acted upon,—water birds requiring more moisture than land-birds, and among the latter, those which deposit their eggs in low damp situations requiring more than those which inhabit the hills and heaths. To manage this part of the process is exceedingly difficult; yet, assuredly, success will mainly depend upon this point being attended to, and although Mr. Bucknell's experiments have thrown much light upon this most delicate part of the process, there yet requires much more to be done, before the system can be successfully applied to the eggs of every description of bird.

Free admission of fresh air to the eggs is also indispensable, and this requirement shows most admirably how perfect and beautiful are all nature's operations. The parent bird is necessitated to leave the nest to seek for food; this contingency is not only provided for, but if it does not occur too frequently, and is not of too long continuance, the nascent bird within the shell is not only uninjured, but refreshed by her so doing; and experience demonstrates that, at the Eccaleobion, in imitation of nature, a flush of cold air passing over the eggs every day for a short time is highly beneficial. The successful application of this fact also depends upon the kind of egg,—the pigeon and such birds whose eggs are never left uncovered by the parents, requiring it less than others of a different habit.

It has already been stated, that extreme difficulties lie in the way of a successful investigation of this most delicate subject. This at first may not be very apparent, but with the eggs of the common fowl, three weeks are occupied by every single experiment. By no apparatus, however large, or numerous the eggs it contains, can more than one experiment be carried on at the same time, and as new eggs (such as can be depended upon) can only be obtained during about eight months in the year, it follows that eight or nine experiments with one description of egg are all that can be effected in the course of a whole year by a single apparatus. What then must be the amount of labor and perseverance required, to pursue a series of investigations upon a variety of kinds of eggs; diversified, too, as these experiments must be, from the several conditions of heat, moisture, and air, materially affecting them!

Besides, it is necessary to know the state and

condition of the egg, as also the state and condition of the bird that lays it; if the egg is unimpregnated, if it has been too much shaken, if stale, or the produce of an ill-fed or unhealthy bird, no certain conclusions can be arrived at by the result. The difference in weight between the eggs of different birds, one healthy and well fed, the other ill-conditioned and half-starved, amounts often, although of equal size, to a quarter of an ounce: The event when alike operated upon, is, that one comes forth a strong bird, the other dies through inherent weakness. Unless these preliminary conditions are known, the failure might be attributed to a variety of causes, rather than to the right.

These facts are proved by the uncertainty that attends the intermixture of the eggs of different kinds of birds, and by submitting them to the same uniformity of process, their periods of incubation differ; they generate a different amount of animal heat, they require a different amount of moisture and air; their shells also are of different thicknesses, whereby the nascent bird within is seriously affected by outward circumstances, and the result from such intermixture is, that nearly the whole perish; whereas, had they been separately acted upon, according to the foregoing rules, every good egg would have produced its bird.

Such are the laws which regulate this most interesting and little-understood subject, for explaining which the public are indebted to the indefatigable zeal of Mr. Bucknell, who is of opinion that a new era is opening upon the thickly-peopled countries of Europe, inasmuch as it involves the supply at all times of an unlimited amount of human food. It is, however, too much to expect that the unassisted exertions of a single individual can achieve all that may be desired by it.

A few words more regarding the fallacies in the public mind respecting artificial incubation. Mr. Bucknell informed us, that one of the most commonly-expressed opinions at the Eccaleobion by visitors is, that such birds will not reproduce their kind. This is an error; they propagate their species *precisely as if hatched in the natural way*. Another opinion very generally entertained, he says, is that they occupy a less time in the process; indeed, so much is this believed possible, that not infrequently parties bring the eggs of their favorite birds in their hands, expecting them to be hatched before they leave the room! This we need hardly say is ridiculously absurd, any attempt to hasten or protract the natural period being fatal to the development of the bird. An opinion also prevails, that birds hatched artificially are more tender and delicate than their congeners produced naturally; this also is an error. If there be any difference, the portion of vigor is in favor of artificial production, from the birds being less affected by the inclemency of climate, and having all their organs perfect when they leave the shell; if they afterwards fail, it is entirely owing to ill-treatment or improper food.

The number of birds which have already been hatched by the Eccaleobion exceed twenty thousand, and the proportion lost is small compared with the farm-yard.

LES GUEPES; PAR ALPHONSE KARR.

(Continued from our last.)

SOMETHING POLITICAL.

They who have declared the people *sovereign*, have not forgotten to invest such sovereignty with all the attributes of the ancient royalty they have destroyed. They have even taken care to restore the grotesque order of *kings' fools*, and have themselves assumed the *cap and bells*, in order that the people-king should be amused properly.

There is a certain man in France, not without talent, nay even at times remarkable for his sound good sense. This personage thought fit at the Restoration to get himself created a viscount, but, on after reflection, he became convinced that his

nobility, which was neither ancient nor illustrious enough to permit him to rank with noblemen, might be turned to account with the popular party. He was sufficiently a nobleman to be able to persuade the rabble that he was making them some sacrifice in joining their ranks.—He thought, most probably, of that ancient philosopher who always put aside the leanest oxen, saying, that's quite good enough for the gods.

M. De Cormenin had always hitherto been distinguished by the style, wit, and good sense of his literary productions. With his title of viscount, he has been obliged, it would appear, to depose on the altar of his country the style, the wit, and the good sense which rendered him so long respectable. Add but a few bells to the cap of liberty, and you convert it into a fool's cap.

A FEW WORDS ON GRAMMAR AND RHETORIC.

The following is a quotation from an article in the *Popular Almanack* for 1840, written by M. De Cormenin.

"The budget is a book which *distils gold* from the *tears and sweat* of the people."—This is about as good as the celebrated phrase of M. Berryer; "it is proscribing the very base of social ties."—Or as the grotesquely figurative language, which for a long time made the fortune of the Constitutional: "The *axis* of reason alone can check the *chariot* of state, tossed as it is by so stormy a sea."—We beg to tell M. De Cormenin that if the people are sometimes guilty of grammatical errors, they are never wanting in logic and good sense; unless, indeed, they study publications such as the last by M. De Cormenin.—We are told by all grammarians and orators, that a figure should be coherent and capable of representation upon canvass. It would be therefore difficult for a painter to represent a book which *distils gold*, or the *tears* which contain it. Perhaps M. De Cormenin thinks that, to be better understood by the people, writers must imitate nurses, who indulge in the lisping talk of babies, when addressing them.

But this is not all; let us continue.—"A book which embroiders with silk and gold the mantles of the ministers, which feeds their high mettled chargers, and furnishes their *boudoirs* with soft voluptuous cushions."

Ah! ministers have mantles embroidered with silk and gold! Well, well, we learn something every day; on my honor I was ignorant of this till now. I have had M. Perridge pointed out to me, when he was in the ministry, but he appeared to wear a plain black coat; and M. Lafitte, but he certainly had on a blue coat with metal buttons, and M. Thiers, but he also had on a plain black or raven grey. Who the deuce then, can be clothed in silk and gold?—M. Cunin Gredaine!—No! I remember seeing him at the exhibition of the works of art, in a dark frock coat. M. Schneider! No! he generally wears an invisible green. Can it be M. Duchatel?—Impossible! M. Duchatel dresses always very badly. It is a pity, however, it was not he, for with his punchy corporation, which looks as if he were stuffed, a mantle embroidered with silk and gold, and flung gracefully over his shoulder in the style of Almaviva, would be remarkably telling. All things considered, I fear we must come to the conclusion that ministers do not wear mantles embroidered with silk and gold. Then why does M. de Cormenin say so, and say it to the people? What can be the object of the remark? Is it to make them believe that in his incorruptibility (the incorruptibility of a genuine savage), he has never in his life seen ministers? I beg pardon, M. de Cormenin; but did you not see them once, at all events, at the period of the restoration, when you employed such urgent entreaties to induce them to erect a certain pigeon-house you know of, into a viscounty?

Let us continue:—"Dear me, I had nearly forgotten the *high mettled chargers*, and the *boudoirs*!" Who in this world ever saw the *high mettled chargers* of M. Duchatel? Poor steeds! They, above all others, *high mettled*! Oh, the flattering M. de Cormenin! How prodigal he is of adulation

to horses; he who is so niggardly in his adulation of kings. *The high mettled chargers of M. Duchatel!* I would give the world to have said so good a thing. A pair of worn-out perch-backed wretches, who drop on their knees when they are harnessed; as *Kings, now a days, to receive their crowns!* I speak of the horses of M. Duchatel, because he is the only minister who has any; the rest hire glass-coaches by the month. And the *soft voluptuous cushions* of ministers' *boudoirs*. This is the first time I ever heard of boudoirs in the offices of the ministry. I remember the principal room in the home department, but I saw nothing but plain old furniture, which could not have been new even in the time of the empire, but which no ministry since has ever had the audacity to go to the expense of changing. With *premises* powerful as these, M. de Cormenin must necessarily arrive at conclusions of a first rate order of buffoonery. This he does not fail to do. He tells the people that a budget should no longer be tolerated; that it is an abuse an antiquated grovelling prejudice.

Would it not, oh, M. de Cormenin! be more correct, reasonable, and honest to inform the people that the revenues are in many respects badly levied, and badly appropriated; that taxes should be taken off the necessities of life, and laid upon articles that administer to the luxury of the wealthy; but that in a country so rich as France, the enlightened, and all who have sincerely at heart the general good, should demand not *how much* money is expended, but *how* such money is applied?

So you would have no budget, M. de Cormenin! consequently no revenues, no administration, no army, no public works, no pavements, no street lamps, no repairs to old edifices, no hospitals, no laws, no magistrates, no property, no security in or out of doors, no means for the suppression of crime, no asylum for the infirm or destitute. If this is what you wish, M. de Cormenin, accept my sincere compliments. No revenues. Upon my word it is an admirable idea, and most clearly pronounced. It has been all along objected to the opposition, of which you are the leader, that it would upset an order of things which certainly ministered to the public weal, although capable of much improvement, without being able to establish any thing in its place. You and your party may destroy, but depend on it you will not reconstruct without *revenues*. You are a clever and enlightened man, M. de Cormenin! but it is melancholy to see you descend to the level of a tap-room orator. • • •

PHILANTHROPISTS AND PRISONS.

Two classes of philanthropists divide among themselves, in equal parts, the whole mass of French prisons and prisoners; and the Government so far from opposing the least resistance to this unheard of interference with its power and prerogatives, encourage them in their audacity.

The Government does for philanthropy, what it did for Asphalt; for criminals, what it did for the Boulevards.

One half, that is to say one side of the Boulevards was given up to Scyssel's Asphalt, the other side to Polonceau's Bitumen. One half of the prisons with their inmates have been given up to certain philanthropists, the other half with their inmates to other philanthropists.

We shall commence by stating the modes of action employed by each; we shall afterwards draw from them our own conclusions.

The philanthropist of the Ecole Francaise looks upon a man as sufficiently unfortunate in the mere fact of his being a criminal, and denies the necessity of adding to his sufferings by an excess of punishment. He would wish him well housed, well clothed, well warmed, well fed, and agreeably entertained.

The other philanthropist invests himself with the mantle of his own virtue, and delights in the recollection of his good deeds. Yet he would have the criminal supplied with wax lights, and strongly recommends for his potations, Claret of 1834; in addition to this, a little music, theatrical entertain-

ments, books,—in one word, every *agrément* of which other men stand so much in need.

He loves his criminal, cherishes, fattens, and consoles him. M. Martin du Nord belonged to this school. On its being once observed to him, that the prisoners' bread was bad, he replied, "Their bread is better than the soldiers."

Conclusion: people under pecuniary embarrassments, labroers without employment, hasten to assassinate their wives, or poison their brothers, in order to partake of the indulgences of felons."

BERLIOZ'S LAST GRAND SYMPHONY.

There are a great many who mistake obstinacy for genius. Music is melody; music without melody is an apple-pie with quinces,—all quinces. Science is a means, not a result. The music of M. Berlioz is said to be learned. This is only said by unlearned reviewers. Gretry once said to a musician, "You have neither genius, nor invention; your only resource is in your learning." Take a street porter, and you will render him in time, with the assistance of proper masters, a learned man. Berlioz's music, which I do not accept as music, be it clearly understood, is the result of a false appreciation. M. Berlioz wishes to paint by music all that can be painted by words. So far from being a progress in the art, it is a downright degradation. Music is above poetry; it begins where language ends. They who wish to restrict it to the proportions of language, resemble the sportsman who brings the lark down at his feet, by his murderous shot, while enlivening nature by the sweetness of its carrol. M. Berlioz finds rythm a bore, on account of its antiquity; he therefore suppresses it. In poetry, time and measure are also antiquated, but they are not the less preserved. If the melody and rythm of music are suppressed, nothing is left behind but noise and *ennui*. I have always had a peculiar distaste for music whose beauty required to be proved to me; music should be felt: physically speaking, it should be felt in the breast and not in the head. The music of Berlioz is addressed to the head; the breast receives no impression from it. I know I shall be looked upon as an ignorant man; but Orpheus charmed tigers and panthers, which must certainly have been as ignorant as myself. They who write musical reviews are for the most part young men, who employ musicians to furnish them with the necessary quantity of musical jargon to dress up their articles, in return for a supper, or perchance an order for two to the boxes. M. Berlioz has painted in music (as the bill announces) Romeo, perceiving the first effects of the poison; the music executes a rumbling, streperous sound; "Astonishing!" exclaims an enthusiastic auditor,— "How exactly like the colic!"—In the midst of a frightful tumult of trombones and base viols, I was desirous of knowing what all this meant, and therefore looked at the concert bill, a neat little book in rose colored paper, and found it was intended to describe "the silent and deserted garden of the Capulets." No one, I trust, will accuse me of bad faith, when I confess that I admire the hardihood of M. Berlioz; I wish I could admire as much his music. I would willingly have applauded him at the *Conservatoire*, and at this concert; my ears were open to receive the most trilling strain of melody, but not a single bar had the civility to resemble it; I became *ennuyé*, for I felt no emotion. In vain am I told that I am incapable of appreciating learned music; the music of Beethoven is learned, if ought in this world can be esteemed so, but I am not *ennuyé* by it; on the contrary, it produces a delicious dreaminess. The music of Rossini is learned, yet it occasions on me an inexpressible charm. The music of Weber, also, is, I believe, generally admitted to be learned; but when I hear it my heart beats tumultuously, and not infrequently I cannot abstain from shedding tears. Under the pretext of supporting learned music, they have invented a thing called *Haller*, and another called *Meyerbeer*, while Rossini has been put by in the lumber room. There is one melancholy consequence which ever ensues from according too inconsiderately the crown of glory; namely,

that by adjusting it to certain heads it becomes so much contracted, that when required to be placed upon the brows of men of real genius it is found too small."

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING APRIL 20TH, 1840.

Monday.	Statistical Society.....	8 P. M.
	United Service Institution....	9 P. M.
Tuesday.	Medical Society.....	8 P. M.
	Linnean Society	8 P. M.
	Horticultural Society.....	3 P. M.
	Electrical Society.....	8 P. M.
	Architectural Society.....	8 P. M.
Wednesday.	Society of Arts.....	8 P. M.
	Microscopical Society.....	8 P. M.
Saturday.	Mathematical Society.....	8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL INSTITUTION.

Friday Evening Meeting. April 10.

A lecture was delivered by Mr. Nasmyth "On the functions of the mouth, and the structure of the teeth in man and the lower animals." The preliminary part of the discourse was occupied in explaining the vast process of assimilation both in plants and animals, and proving that no particle of matter is wasted, or can be reckoned superfluous, even although it becomes changed as to the nature of its molecular parts; by this process it is, the vital powers of animals and vegetables are sustained, and their growth and renewal of parts effected; as an example of the beautiful and simple harmonious laws of nature, the functions of the plant were adduced—imbibing its nourishment either from the earth or surrounding atmosphere—its fluids are conveyed to the leaves to receive the full action of the air and light—in the leaves the noxious gas (carbonic acid) contained in the surrounding air is decomposed, the carbon being deposited, increasing its growth, while the oxygen is returned, rendering the air fit for the respiration of animals. Mr. Nasmyth briefly alluded to the nature of the mouth as existing in the various tribes of animals from the *monad* up to *man*.—The simplest form of nutrition is exemplified in the Zoophytes.

In the crocodile and other animals who prey upon the larger kind, whose power of resistance is great, nature has provided them in case of accident, with teeth situated one within the other. The crocodile is furnished with three, the shark with seven, so that if they are broken they can be readily replaced. In many fishes (as in the pike, &c.) the teeth are firmly fixed to the bone of the jaw, forming but one piece. The degree of rapidity of motion was stated to be connected with the development of the digestive apparatus. In those animals possessed of habitual celerity, the power of assimilation is vigorous, as in lions, tigers, &c., while the herbivorous class are harmless. In man the advantage of a well-formed mouth is of paramount importance, as upon it, depends the powers of digestion and assimilation, and through these the development of the osseous system, and the configuration of the chest. The character and habits of animals may to a great extent be arrived at, by the inspection of the jaw, for example, the horse is furnished with strong front teeth in the upper jaw; with these he is enabled to devour food of a harder character than the ox, which has no teeth (incisors) in the upper jaw; these animals are harmless, and easily subdued. Monkeys feed on fruits, their movements are active and energetic. In man are concentrated all the faculties seen in other animals; this was stated to be owing for the most part to the development of his mouth. A rapid sketch of the development of the dental apparatus throughout the animal kingdom followed. Some animals are devoid of teeth, such are those

which feed on animals so diminutive as not to require those organs for the comminution of their food; of this kind the whale and sturgeon were instanced as examples. The *manis* and *ant-eaters* are likewise destitute of teeth, and *sloth* possess no incisor teeth, to compensate, however, for this deficiency, they are provided with organs answering the desired purpose, and beautifully adapted to the wants and exigencies of the different animals.

The uses of the teeth are modified according to the nature of the food; some are adapted for seizing, others for tearing, crushing, and grinding the aliment. The forms of all teeth are either *wedges* or *cones*. Thus the front teeth (incisors) are wedged for cutting, while the cones or prominences on the molars adapt them for grinding and crushing. The tusks of the elephant are reconsidered by naturalists as incisors; the modification presented in the *Flying Lemur* was noticed; from the marked character of these front teeth in the gnawing animals, as rats, &c., naturalists have instituted the order *Rodentia*.

Of all the forms of teeth the *simple cone* is the most formidable, being adapted for tearing flesh, as seen in the lion, tiger, hippopotamus, and other carnivora; the teeth of the elephant, and flying lemur, are composed of a number of cones cemented together: the only exception to this form (the cone) exists in the *wolf-fish*, in which the mandibles are armed with stout, bony tubercles, surmounted with small enamelled teeth, adapted to the crushing of the harder shell-fish. In man, the teeth form the most perfect apparatus of the whole of living beings, being smooth, well arranged, and of a good color, adding to his health, comfort, appearance, and perfectness of speech. Allusion was made to the beautiful arch of the palate in man, and to its effects as regards speech if any part is removed. The teeth are the most compact of the solids of the body, the ivory forming the principal part of the tooth; the relative quantity of ivory found in the teeth of different animals was illustrated by diagrams. Mr. Nasmyth is of opinion that the ivory is no more than the ossified pulp: on the pulp is seen a reticulated structure, in the cells of which the ivory is deposited. Mr. N. has been able to discern the ivory in a state of transition, that is, through its different stages, from the commencement of the deposit within the cells, to the formation of the entire structure. He is of opinion that the fibres of which the substance of the tooth is formed are not tubular, but baccated, like rows of beads; this he has observed after subjecting the substance to maceration in acid. It not infrequently happens that bone is found embedded in the centre of the pulp, giving rise to serious and excruciating symptoms. Such a deposition is usually the result of a severe injury, such as the application of the actual cautery, or improper caution in stopping teeth; its structure is partly bone and ivory. In the *sloth* and *walrus*, after the formation of the ivory is completed, the interior is filled up with bone. With regard to the enamel, Mr. Nasmyth is of opinion that it is distinctly *cellular*, which is at variance with the opinion of others; of so great importance is a knowledge of this fact that Mr. N. can distinguish the teeth of different animals merely by the microscopical examination of the *cellular enamel*, the cells of which assume different forms in different classes. The arrangement in the tooth of the elephants of the enamel which is white, of the ivory yellow, and the *crusta petrosa* or cement (very much resembling true bone), which fills up the spaces between the enamel, binding the whole together, was noticed, each possessing different degrees of hardness. Mr. N. has observed the *crusta petrosa* in an attenuated state in the teeth of the ox, and in those of man.

The lecturer concluded by remarking on the importance of a knowledge of the teeth to the naturalist and geologist. To the geologist in particular, as the only remaining parts of inhabitants of a former world are either skeletons, scales, or teeth; a knowledge of the latter subject is of the greatest importance, as from the examination of a fragment he may judge not only to what order the animal belonged, but as to its general conformation, the country in which it lived, and the food on which it sub-

sisted. Indeed, teeth may be considered the most ancient monuments in nature.

The lecture was illustrated by an extensive series of skulls and teeth of animals. On the library table were exhibited:—Illustrations of Liebig's researches on uric acid, by Mr. Fownes; several photographs which had stood eleven months exposure to light preserved by the hyposulphite of soda, by Mr. John Cooper; a specimen of iridescent coal from the United States; some electrotypes and printed impressions from them, by Mr. Everett; a model of Devaux's hot blast furnace, employed for the manufacture of iron by stone coal anthracite, together with specimens of iron; the photogenic effects produced by Mr. Hunt, (see Phil. Mag.)—Mr. Powell attended with his most improved microscope, and exhibited Mr. Nasmyth's various preparations of the teeth.

GEOLOGICAL SOCIETY.

April 8th. Dr. Buckland, President, in the chair.

Elected R. V. Barnwell, Esq.—A paper was read from Mr. Buddle, "On the great Fault in the Forest of Dean, called the *Horse*." The paper was illustrated by a series of diagrams, exhibiting the coal field of this locality, and showing also, that at a particular part of the Forest of Dean the *Fault* occurs, which has received the name of the *Horse*. The author of the paper imagined this spot to have formerly been a lake or river, and the drained excavation to have been filled up by the next sediment, which was sand. From the diagrams exhibited, it was imagined that the smaller currents must have traversed in its vicinity, as similar interruptions are observed on a smaller scale, likewise filled with sandstone; giving rise to the idea of small tributary streams having existed in connection with the larger one now occupied by sandstone and called the *Horse*, the currents of which moved at a less rapid rate over a flat country. The thickness of the bed of coal on either side of this mass of sandstone is about six feet, and it is supposed that the river or lake which existed must have washed out in this situation the whole of the matter deposited, requisite for the formation of coal.

Mr. Sopwith, the coadjutor of Mr. Buddle, engaged in examining the mines of the Forest of Dean, attended with his model of the locality, constructed on a new plan; it being made to show the sections of the strata, both vertically and horizontally, similar to the anatomical preparations of the human body. The surface of the model exhibited the various undulations of ground, with the different localities marked upon it—a perfect facsimile of nature, and drawn from actual measurement and observation. The model took to pieces both horizontally and vertically; the horizontal sections exhibiting to a scale the workings of the different mines, &c. The surface of the model was divided by lines indicating square miles, these lines extended through the whole of the sections, serving the purpose of reference and index, together with horizontal lines showing the different levels at which water might be drawn off with or without the assistance of steam-power. The President expressed his approbation of the plan applied by Mr. Sopwith in this model, which was new as regards the construction of geological representations. A somewhat similar one was furnished by Mr. Taylor to the society some years since, exhibiting the Monmouthshire coal field, but this only applied to the surface.

Capt. Basil Hall read a paper from Mr. Cruize, of Portsmouth Dockyard, being an "account of the wood and various other specimens recently obtained from the wreck of the Royal George, with remarks on the preservation of the different articles exposed to the action of the salt water for 57 years, as compared with those which had been buried in the mud." A variety of specimens were on the table, illustrating the paper. The Royal George was built at Woolwich, and launched Feb. 1, 1756; and was

at that time considered the vessel of the greatest force in Europe, her tonnage being 2,046 tons.

This ship was lost in 1782, being then 26 years old; consequently, the timber may be reckoned to have been felled nearly a century back. The object of the removal of this vessel by the means employed by Col. Pasley, is to clear the anchorage at Spithead; the operations will recommence early in May. The principal object of the communication was to draw a comparison between portions of the wreck which had been subject to the action of salt water for 57 years, and that part which has been buried in the mud for probably a period not much shorter. The facts adduced tended to show, that the portions buried beneath the mud could and would have lasted for ages, whilst those exposed to the action of the salt water became infested with the worm, and were either wholly or partially destroyed. This was strikingly exemplified in a portion of a *fire boom*, the lower end of which had been buried in the mud, which was exhibited in a perfect state, covered with the black paint, and bearing even to this day the marks made with the plane on its surface; the other extremity, which had been exposed to the action of the salt water, was covered with various marine animals, and was more or less destroyed. Sheets of copper had been extracted from the mud, and weighed nearly as much as the sheets of the same size at present used for sheathing vessels in Her Majesty's Navy. There were also exhibited some copper nails taken from the mud in a very perfect state. The carvings on the brass guns extracted from the mud were sharp and perfect; those exposed to the water were much damaged. A specimen of tarred rope-yarn obtained from the wreck was likewise shown, which, when manufactured into a rope of two inches and a half circumference, sustained a weight of 21 cwt. 3 qrs. 7lb. A silk handkerchief and a guinea have likewise been found in the mud, the former when washed did not appear to have in any way suffered. A description of the various specimens on the table followed. Some observations were made on the difference of durability of wrought and cast-iron; bolts embedded in timber were exhibited, in which, although a great portion had become oxidised, and even infiltrated into the texture of the wood, the lamellated structure of the *drawn* iron of which they were made could be observed.

In illustration of the non-durability of the cast-iron, it was stated that the oxide washes away, and a mass of carbon remains, charged with a little oxide of iron, which crumbles to pieces in handling. Mr. Hullmandel communicated a note on the subsidence of the land in the Bay of Baia, on the Neapolitan coast. The author stated that during the prevalence of westerly winds, the sea entered the door of a convent to the extent of six or twelve inches, and likewise that it overflowed a wharf in the vicinity, which the author considered to be owing to the subsidence of land in that quarter. Dr. Buckland stated, that in the former instance it might be probable that the sea might have encroached, and that much soil may have been removed, which formerly served as a barrier, but in the instance of the wharf it is likely to be owing to the sinking of the land, as the country has been subject at various times to elevations and depressions. Remarks were read from Mr. T. Lay, on the geological features of Borneo Proper, more particularly in conjunction with the discovery of a coal or *lignite* in sandstone, found by the author in a small island, the vein taking an angle of 45°. Two kinds of sandstone were exhibited, (hard and soft) together with specimens of *Lignite* from Borneo Proper.

A note was read embodying remarks on geological specimens brought from Syria, by John Hugh, Esq., including fish and shells, most of the latter being casts, and collected in the Lebanon range, 6,000 feet from the surface; few of them have as yet been recognised; they are, however, chiefly referable to the lower cretaceous and green sand formations.

The President stated that two specimens had been forwarded for inspection: one a small slab from the Dudley limestone, supposed to contain a cast of the

harder parts of a molluscous animal, probably a *Spirifer*. The other was a mass of Purbeck limestone, weighing 800lbs., sent by Mr. Wilberforce, having on one surface a number of salient projections resembling *fucoid* masses, and on the other side two or three impressions of a cast resembling a foot with three toes, which cannot at present be identified.

METEOROLOGICAL SOCIETY.

April 14th. Dr. M'Intyre, F. L. S., Vice-President, in the Chair.

After the minutes of the preceding meeting had been read and confirmed, Thomas Charles Robinson, Esq., was elected a member. The secretary then called the attention of the members to the numerous books, plans, diagrams, tables, and communications on the table, all of which had been received since the preceding meeting. Among the donations were 10 volumes and pamphlets from the Royal Academy of Brussels. A very valuable MS., containing 19 years uninterrupted meteorological observations made near the city of Hersfeld, by James Perdergrass, Esq., Capt. R.N. 50 copies of the introductory remarks to the first volume of the society's transactions, printed at the expense of W. Bateman Byng, Esq. F. R. A. S., and presented by him to the society for gratuitous distribution among the members and their friends. Among the communications were monthly registers from Aylesbury, Hartwell, High Wycombe, Thetford, Gosport, Sheffield, Tonbridge, Montreal, Nottingham, Cleckheaton, Haraby, Brussels, &c.

Among the scientific communications, were 1st. A notice of a water-spout, observed by Dr. Woods, on the 29th of Nov. 1839, in lat. 2 deg. 40 min. N., and 91 deg. 50 min. E. long., with three drawings. 2d. An account of "a singular atmospheric phenomenon observed at Gosport, by J. H. Maverly, Esq., of the Royal Academy, on the 12th March, 1840, accompanied by a diagram. A paper was read by the secretary from Joseph Atkinson, Esq., of Haraby, near Carlisle, entitled "A few Remarks on a Rain table and map." This table and map, which were beautifully lithographed, exhibited a tabular view of the average quantity of rain which falls in different parts of Great Britain in a year. In most of the places the quantity given is from an average of a great many years' observation; from which it appears that the quantity of rain that falls at Keswick is nearly double of that which falls at Carlisle, while the number of rainy days at each place is nearly the same. This difference Mr. Atkinson considers to arise from the clouds being interrupted by the ridge of mountains; called the "Backbone of England," which mountains drain the rain clouds of their contents before they reach the east side of the island.

The following are a few of the places at which the average fall has been pretty accurately determined; viz. Whitehaven, 54 inches; Keswick, 67 inches; Carlisle, 30 inches; and Widrington, 21 inches; this forms the line across the North of England; taking a line from west to east, from Swansea, we have Hertford, 27 inches; Birmingham, 26; Derby, 27; and Newcastle, 25; thus the west of this line gets only two inches more than the east. Taking a line still further south, the west side again resumes a greater quantity, the east still maintaining its average of 26 inches. Thus, Ludgvan has 41 inches, Wells nearly 50, Milbury in Oxfordshire 48, Bedford 25, Kimbolton 25, and Norwich 25.

Taking a line across the south of the island, we find Selbourne and Dover each have 37 inches, and Chichester, 32 inches.

The author of this paper solicits communications from scientific men, in order that he may make his map and table as perfect as possible.

* * We beg to correct a statement in the report of the *Uranian Society* of last week, viz., that the author of the paper was of opinion "that matter was equally inclined to rest as to motion;" it should

have been, that the author is of opinion that " motion is an inherent property of matter (which he regarded as a heterogeneous mass), and that which is termed rest, merely the result of a compound motion by which the activity of a moving body is rendered imperceptible.

THE THEATRES.

This being Passion week, and the London Theatres, in consequence, being hermetically sealed to the Public, we are under the necessity of suspending our Weekly Report. We however give, as usual, the

FOREIGN THEATRES.

PARIS.—Crowds assembled last week, at the Renaissance, to witness the representations given in favor of the Poles, by the Société de l'Hôtel de Castellane. We were well satisfied with the music of M. Flottow, many of the *morceaux* of which were of exquisite beauty. The chorus of the young nobles in the first act, produced an electrical effect. A little melody sung by Sig. Megrin, was loudly encored, and the duets called forth the approbation of even the severest critics.

The representations of the *Fille du Cid*, occasion, every evening of the performance, more and more crowded houses. Mdlle. Guyon, who plays the character of Elvira, will have to date the fame that awaits her from her appearance in this piece.

The engagement between Mdlle. Rachel and the Comédie Française has at length been signed; she is to have 51,000 frs., for 60 nights' performance. The engagement is looked upon as onerous to the managers, but they have taken the precaution, in the interests of all parties, to allow Mdlle. Rachel a *carte blanche* in the choice of pieces in which she will appear, in case of a visible deficiency in the treasury of the theatre.

The *Ambigu-Comique* has just produced a new five-act play of a more than melodramatic character; it is entitled "l'Abbaye de Castro." The incidents of the drama are those described by Anne Radcliffe; plus horrors upon horrors committed by condotteri; the lady abbess reigning by piety, poison, and the sword. The inquisition not only enters as a distinguishing feature into the piece, but even Pope sextus-quintus, so that the lovers of mystery, monasterial silence, darkness, tombs, subterranean passages, foul assassinations, tortures, firing of cannon upon helpless victims, and other fascinating horrors of this kind—have only to visit the Ambigu-Comique to be in ecstasies.

We had the pleasure to listen the other evening, at a concert, to the performance of three children of extraordinary talent: Eliza Barge, a cantatrice; Eliza Couderc, a pianist; and young Bernardin, whose talent on the violin is really remarkable. What these children may become hereafter, as artists, is of course quite problematical, but certainly there is every indication of their arriving at the highest honors in the musical art.

CASSEL.—Louis Sphor, the celebrated composer, and *Maitre de Chapelle*, has just terminated his grand Oratorio, upon which he has bestowed the labors of the last six years. It is entitled "*The Fall of Babylon*." The rehearsals gave great satisfaction to the dilettanti present. The first public performance of the Oratorio will be executed on Holy Thursday, at St. Peter's Church, by an orchestra of 800 performers.

BRUSSELS.—Madame Albertazzi, well known to the musical world in Paris and London, is at this moment in Brussels. She has expressed her desire to comply with the wishes of the public, and will give a concert in a few days.

La Société d' Harmonie d'Ixelles, gave a magnificent Serenade this week to De Beriot in honor of his return into the commune, in which he has a very splendid mansion, built during the life time

of Malibran. Thalberg who was with him at the time, expressed a high opinion of the execution of the music of *Robert-le-Diable* by the band consisting of 50 performers.

A new ballet has been produced at the Grand Opera, entitled "*Kenilworth Castle*." The richness and variety of costumes of the nobles of the court of Elizabeth, are ably represented. The interior of Kenilworth Castle is a *chef d'œuvre* of scenic splendor. The ballet is the composition of M. Albert, and is without exception the most magnificent we ever yet beheld.

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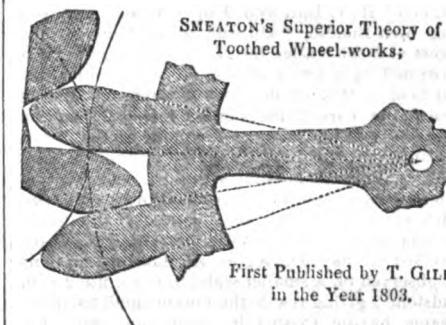
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 A WEEKLY BRITISH AND
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ON THE ORIGIN OF TELEGRAPHS.

CLAUDE CHAPPE, the inventor of the Telegraph, was born at Brûlon, department of the Sarthe, in 1765. At twenty years of age he was the author of several memoirs upon physics, in consideration of which he was admitted, in 1792, member of the Philomathic Society. It is said by some that, during the period of his education at Angers, he entertained the most ardent desire to correspond with his brothers, who were placed at another academy, situated far away, and that this desire gave rise to the idea of a telegraphic communication, such as the one in actual operation in our own times. Other biographers affirm, that it was in 1791 that Chappe invented the telegraph, for the purpose of corresponding with some friends, and that his first experiments even were quite successful. From that moment Chappe resigned himself entirely to the study and improvement of his new discovery. When his system was completed, when the machinery worked well, and the signals and language were perfectly defined, and capable of being clearly comprehended, he addressed the Legislative Assembly upon the subject, and laid before them the model of his machine, to which he gave the appellation of telegraph. On Thursday, the 11th of April, 1793, (*Moniteur*, p. 417), Romm  , in the name of the United Committees of War and Public Instruction, reported upon this discovery as follows:—"At all times has the necessity been felt of a rapid and certain mode of correspondence between places situated far apart. But in war-time, whether in military or naval campaigns, when events follow each other in quick succession, it is of the utmost consequence to be informed of them as soon as they occur. New orders are compelled to be transmitted; head quarters desire to give to an invested garrison, or body of troops, the assurance of immediate relief, &c. We are informed that various attempts have been made at different periods of history to arrive at this important method of communication, and know that all have failed either on account of their defective character, or the monstrous cost of putting them into execution. * * * Then entering into the absolute details of the method proposed by Chappe, Romm   continues:—"We have here an ingenious means of writing in the air, by employing characters few in number, simple as the right line of which they are composed, clear and distinct in their transmission, and almost as rapid as lightning." The reporter lastly observes, that as the intermediary agents have no knowledge whatever of the value of the signs, the secrets transmitted are incapable of being violated.

The convention voted the sum of 6,000 frs. for the establishment of a line of correspondence sufficiently long to afford the most positive conclusion on the reality and advantage of the discovery.

Dating from the 26th of July, 1793, (*Moniteur*, p. 894), Lakanal, in the name of the commission, rendered an official account of the experiments made upon the tachigraphic method of communication proposed by Chappe. In this report, he describes the process in detail; he announces that experiments were made the 12th of July, on a line of nine leagues, (the vedettes were at Meudon, Montant Ecouan and St. Martin-du-Tertre); that the secret of the despatches was unknown to the vedettes, and that the transmission of a despatch from Paris to Valenciennes could be effected in 13 minutes 40 seconds; that the expense of establishing a telegraphic line between these two cities would amount to 58,000 frs.

This report was greeted by the applause of the whole Assembly, who immediately decreed with unanimity of voices the establishment of the proposed line, and confided its direction to Bouchot, then war-minister. Chappe was rewarded by the title of telegraphic engineer, and the pay of an engineer lieutenant. The Convention hastened to put into effect this extraordinary means of communication. It was justly anticipated that its enemies who were not prepared, would be every instant at default, for the indefatigable activity of this assembly had means equivalent to its being everywhere personally present. The Assembly could know with a sort of omniscience the result of distant movements, and communicate its will with the rapidity of its energetic utterance. Not long after the adoption of the line proposed by Lakanal, the President, at the opening of a meeting, announced to the assembly the telegraphic intelligence of the taking of Cond  .

The Convention decided that the army of the north had well merited the thanks of their country, and that the town of Cond   should be thenceforward called *Nord libre*. Hardly had this resolution been carried, than the President announced again to the Assembly, that the decree had arrived at Cond  , been printed, proclaimed to the troops, and greeted by them with enthusiastic applause. The Convention comprehending the immense results to be obtained from the telegraph, decreed the formation of various lines to connect the frontiers and every part of the interior with the capital, in order, as it were, to be present with the armies, and to excite them to combat for liberty and save their country.

Napoleon, in his gigantic enterprises, knew well how to appreciate the value of the telegraph, and

availed himself of it in a signal manner in the campaign of 1805. He began by establishing a line between Strasburg and Munich; when the Austrians, believing him engaged upon his descent on England, advanced upon the Rhine, without waiting for the arrival of their Russian allies, Napoleon informed by telegraph of their first movements, took post with a part of his army, while the rest followed by forced marches, and, by an admirable manœuvre, taking the Austrians in their rear at Ulm, forced 40,000 men enclosed in a fortified city to ground their arms without being under the necessity of firing a single shot!

Since the period of Chappe's invention, a mass of authorities have been cited tending to deprive him of the honor of the discovery. Pamphlets upon pamphlets have been published, principally in German, which have in reality ably served to prove the utility and novelty of his method. However, fatigued at length by the pertinacity of his detractors, Chappe died ere he had reached the age of 42.

Doubtless, the idea of communicating at great distances was known and acted upon before his time; but to him alone belongs the merit of having invented a commodious instrument capable of serving for the transmission of a sufficient number of signals, and more particularly of simple signals, which, by the assistance of binary arithmetic, may be made to form words and entire phrases for the expression of every sort of intelligence of every kind of event. From the time of Chappe downwards, the telegraph has been universally employed and submitted to considerable improvements; before him all that was done in the way of telegraphic communication amounted but to fruitless essays. However the history of these essays should be made known, were it merely for the purpose of studying link by link the chain of progress by which man has at length realised so important a discovery, in consequence, either of results obtained, or of those which he has yet to hope for.

Rude in its construction in the first instance, the telegraph has arrived at its present state of perfection by slow gradations. There are two distinct periods of history; the first, during which only three signals were employed, which were agreed on previously, and the appearance of which announced a foreseen event, but without details; during the second period, the signals represented letters, and in these, alphabetical signs were replaced by numbers, which, with the assistance of binary arithmetic and the addition of a small number of particular signs, express all the combinations of language.

In very ancient times, signals were kept up by

means of shouts, fire, or smoke ; the most remarkable traces of these exist in Asia.

By degrees, the art of communicating by signals spread from Asia into Europe. We first find it among the Greeks. The most ancient example is the history of the black and white sails of Theseus. Eschylus, in his tragedy of Agamemnon, affords us an accurate account of a line of signals by fire, established between Europe and Asia. A vedette who for ten years had observed the fire on Mount Ida, seeing it repeated in several other places to announce to Clytemnestra the fall of Troy, exclaimed "Thanks to the Gods, the happy signal at length bursts forth from darkness. Hail, hail thou bright torch of night, thou awakenest a day of splendor!" Clytemnestra apprises the chorus of the victory of the Greeks. The chorus demands who hath informed her of the news.—'Tis Vulcan, she replies, by his fires kindled on Mount Ida : from height to height the flaming messenger hath flown to cheer us in our palace. Clytemnestra goes on to inform the chorus that the posts were established on Mount Ida, on the promontory of Ilernes, at Lemnos, on Mount Athos, and onward to Arachne and Argos. It is highly improbable that this line of signals existed in the thirteenth century before our era ; but it is quite certain that, from the fifth century this communication was established between Europe and Asia ; it is also probable that the desire to be informed of the military movements of the Persians, decided the Greeks to establish and sustain these fires. Aristophanes in the following century speaks of the fire of Lemnos, in the comedy of Lysistratus.

But it was only in the time of Philip the father of Perseus (third century) that telegraphic communication (in Greek *Kurse*) made any remarkable progress among the Greeks. This prince was in the constant habit of employing signals in his wars. On this subject we have many details in Polybius (B. X.).

We may form a correct estimate of the importance of the telegraphic art among the Greeks, by the multiplicity of words which in their language relate to the use of telegraphs. Among these we have only to cite, *pharos*, beacon; *pur*, fire; *phructos*, signal by fire, with torches; *phructaria*, place of observation; *phructros porcules*, sentinel charged with giving the signal by fire; *phructorein*, to observe and make signals; *pursea*, signal by fire, despatch. Moreover, among the Greek signals were distinguished, sonorous signals—*symbola* or *semeia*; and visible signals. *syntemata*; which completes our data upon the resources of the Greeks in the art of signals.

Among the Romans, telegraphic communication was late in its introduction into use. Polybius, the counsellor of Scipio, was probably the first to import it to Rome; however, Cæsar (Bell. Gall. lib. ii.) appears once to have employed signals by fire in order to reconnoitre the movements of the enemy, and to this may be reasonably attributed the rapidity and assurance of his marches and plans of battle. The Gauls likewise made use of certain signals; thus, when the Carnuti took Orleans, the news of the event spread rapidly over Gaul; "For," says Cæsar, "whenever anything important or interesting takes place, the Gauls give notice of it to each other by a succession of shouts which are heard across the country; so that what occurred at Orleans at sunrise was known at Auvergne before nine in the evening, notwithstanding the distance of 80 leagues" (lib. vii.). At a later period, the Romans opened admirable roads throughout the empire, and from distance to distance erected towers, in which were placed vedettes for the purpose of transmitting signals. Towers are still found at Uyez, Bellegarde, Arles, Nimes, Besançon, &c., which evidently served for telegraphic communications. Trajan's column presents us in its admirable bas-reliefs with a tower, from the window of which passes out a beacon light; so that we are thus enabled to form a correct idea of the manner in which those signals were executed.

These are almost all the really important notions furnished by antiquity of the telegraphic art. In

the middle ages, this rapid mode of transmission was employed at Constantinople, where in general the knowledge of the ancients was sedulously preserved. In order to be apprised of the approach of the Arabs, the Greek emperors established a line of signals between Tarsus and Byzantium. The Arabs of Spain and the Spaniards both employed fire flags and cannon in guise of signals. At length in the 15th century, a monk called Trythemus invented a system of telegraphic correspondence (*Stenographic Trythemiada*) in order to transmit by the aid of artificial light news to any distance, however considerable. Notwithstanding which, with the exception of a few incomplete notions, we are now in utter ignorance of the means proposed by Trythemus.

Notwithstanding all the efforts of antiquity, it was totally unable to systematise the telegraphic art. It was not until the 17th century that a Frenchman, availing himself of the labors of the ancients and of modern discoveries in optics, proposed a new means of effecting telegraphic correspondence. To write at a distance, in order that it may be read, requires that the writing should be seen from a distance, and the progress is due to the application of the telescope to the telegraphic art. This application admits of the diminution of a certain number of signal posts. Another difficulty remained to be overcome ; could alphabetical signs be employed to form words and sentences ? For this long and difficult method of proceeding was substituted a new system, the employment of numbers. Signals thus reduced to a comparatively small number, executed by very simple machines, and perceptible by the telescope, constitutes the modern telegraphic art. It is to France that the world owes these admirable discoveries. At the head of the telegraphic art are conspicuous two Frenchmen, Amontons and Chappé.

It would be difficult to conceive how the method of Amontons could remain so long without being put into execution, did we not reflect that a people seldom adopts that of which it does not immediately stand in need. The European governments of the 17th and 18th centuries did not feel the necessity of instantaneous communications ; the discovery of Amontons was admired and eulogized, but only as an object of curiosity.

It belonged to the French revolution, which imparted to the rest of the world a movement so prodigious, and taught mankind the great principle which ought to bind nations to each other, to execute the first telegraphs ; and we have already seen with what alacrity the Convention adopted the views and discoveries of Chappé.

Hardly was Chappé's telegraph established, hardly had its immense results begun to be appreciated, when it was adopted almost universally, and scientific men set about improving it.

There are ameliorations yet to find in order to overcome the impediments of darkness, fog, and rain. These inconveniences were attempted to be removed by adapting lanterns to the various branches of the telegraph.

As far back as 1747, the English, among whom may be cited Cavendish, proposed the employment of electricity in order to establish telegraphic communications. By the aid of discharges of electric batteries, they communicated at a distance of two miles. In 1790, Reveroni de Saint-Cyr proposed an electric telegraph, to announce the results of the drawing of the lottery, in order to counteract the knavery of certain individuals. In 1796, Doctor Francesco Salva read to the Academy of Barcelona, a memoir upon the application of electricity to telegraphs ; but all these first efforts everywhere proved fruitless. The establishment of railroads, offers the means of establishing electric telegraphic lines on a grand scale, and, doubtless, advantage will be taken of them.

It is asserted, that at Munich an electric telegraph is established, which serves for certain communications in the interior of the city. Although this improvement in the telegraphic art is still in its infancy, the labors of scientific men, particu-

larly in France and England, are likely to derive from it ere long the most important results.

Hitherto the telegraph has only been used in the service of governments ; science and commerce would both, however, gain were the telegraph at their disposition. In 1837, the government of Sweden formed a new telegraphic line between Stockholm and Furnsemid. Private persons have been allowed to profit by it, upon the payment of about £1 12s. 6d. for every despatch. It is much to be regretted, that elsewhere such an application should not immediately be realised. This is one of the important advantages of the telegraph, and one would suppose a natural consequence of its invention. As railroads abridge distance for man's physical condition, telegraphs ought to annihilate it for his mental ; the telegraph should prepare the unity of national interests, and that of a vast European confederation, by affording the necessary means of communication among community and among nations. The development of the telegraphic system is pregnant with more important consequences to humanity than that of any other discovery made by man.

ON THE MEANS OF LIGHTING FLUES IMPREGNATED WITH BAD AIR.

For a considerable time we have paid the strictest attention to this subject, endeavoring as far as possible to ascertain the best methods of affording pure respiration in spots where unwholesome exhalations or confined air endanger the safe breathing of workmen employed. We have from time to time named the various modes now in use, of serving to each individual a portion of fresh air, and supplying a current to carry off the dangerous effluvia of an infected place. Amongst them we cited a case, made to contain a sufficiency of pure atmosphere for a single individual ; but then again, the dimensions of the case itself, and the difficulty attendant on the operation when the user changed his position, by stooping or stretching up, rendered this method uncertain and troublesome. Another mode in use more simple, but less efficacious, is to place a bandage over the mouth, saturated in some liquid supposed to be capable of destroying the noxious qualities of the atmosphere ere it is imbibed, but as this liquid comes in close contact with the lips, the greatest care must be taken in the choice of it, which is another bar to the adoption of this plan, frequently shutting us out from employing the best counterpoises.

Our researches on this head have led us to examine attentively the pages of the "Annals of Chemistry and Physic," and here we find an invention which we think it right to lay before our readers.

M. Goss, the inventor of this improvement, proposes to substitute a pipe of glass or earthenware (the latter would perhaps be the best, since it costs less and is less brittle), instead of the piece of linen ; one end of this tube to be considerably larger than the other, the person making use of it, holding the small end in his mouth, while the other, which, as we have before observed, should be considerably larger, is filled with tow, smianthus, or other analogous substance, saturated in some purifying liquid. For instance, in factories where the exhalations are unwholesomely acid, alkalis should be employed ; the carbonic acid would be absorbed by lime water ; alkaline exhalations would be overcome by acids. M. Goss then goes on to give a list of the preparations he proposes to employ.

By this very simple invention, the workmen would be placed beyond the risk of inhaling deleterious gases. But to render this plan efficacious, a means must be found of fixing this tube so closely to the mouth, that no breath can be taken in, save through the pipe itself. This, however, is but a secondary point, and one easily arrived at, more especially where the original mechanism is so simple and plain.

Notwithstanding, however, all this, the above

means must not always be relied upon; the plan for overcoming the dangers here alluded to must alter with circumstances and locality. For instance, the best guard against the inhalations of a foundry where antimony is worked, would be utterly useless in a coal or copper mine. There is scarcely any work of human industry in which exhalations do not arise, more or less prejudicial to the healths of the persons employed.

To preserve the laborer or workman from these dangers, is the first solicitude of an honorable mind. To attempt this on all occasions by the same means would be folly, and show that little reflection had been given to this important branch of true philanthropy.

Almost the same rules which apply to giving air to a human being, apply to the lighting of places filled with noxious vapors, and the former power would be but of little avail without the co-operation of the latter; the workman might breathe and move about without detriment to his health, but without light he could not work; light therefore becomes absolutely necessary, and to establish this in places filled with combustible and unwholesome vapors without danger, becomes a subject of important inquiry.

Before, however, we attempt to overcome the difficulties in this branch of science, we must one by one examine the different impediments which present themselves, and regulate the measures to be taken according to the exact local dangers and obstacles which arise; each vapor, each atmosphere, requiring a different apparatus.

It is not in factories or workshops, or such like places, that the great difficulties are to be met with; the air in these establishments is not so mephitic as to extinguish light, and thus plunge the workmen into sudden obscurity. Sickly, bad, and often unwholesome atmosphere, is the worst enemy we have here to contend against. It is in mines, in wells, and such like places that the greatest danger lurks, not only the danger of instant extinction of light, but often its more dreaded contrary, sudden combustion and explosion.

Those atmospheres which are considered incom-
bustible are generally those in which man is supposed to be unable to live; divested of oxygen gas, that necessary composite for man's existence, which so strongly impregnates the air we daily breathe, human life and artificial, equally go out when surrounded with such an atmosphere.

We next come to the opposite of this quality, where combustion may be justly dreaded from a state of the air, so generally understood that we shall not here dwell on it, but pass rapidly on to a third species of atmosphere, to which in a former number we more particularly alluded. A dense smoke arising, we will suppose either from a recent fire or a subterranean explosion, to penetrate it becomes necessary and advantageous for the rescue of life or property, often both.

To penetrate into galleries of mines or other places filled with this smoke, suffocating from its density and its carbonic acid qualities,—to breathe in such a situation, we have already declared not only possible, but pointed out the means of doing so. But we now come to an inquiry of equal moment, the means of illuminating this dense body to enable the penetrator to carry out his researches, and see objects through the surrounding opaque atmosphere.

The first, and hitherto best sort of lamp used on occasions of this kind, is what is called the lamp without flame; this lamp, as doubtless all our readers are aware, owes its light to a small platina wire, which being made red hot, the wick is blown out, and feeds itself on the air around, attracting sufficient combustible air around the red hot ring to give a flame, which in its turn is kept red hot by the fire it has itself created, while the wire enclosure around it prevents this flame exuding from the lamp.

M. Paulin has made some important improvements in the lamps, making them not only the means to give light, but pure respiration to the workmen who carry them.

Mr. Paulin's plan is as follows:—The workman or miner should be clad in a sort of smock frock or long waistcoat made of leather, covering the head, closed at the arms, and confined round the waist with a tight girdle. Air is introduced by means of a pump, and a long pipe of flexible leather (like an engine sock), which the man drags after him. This air, which continually keeps up healthy current inside the jacket, enables the wearer to breathe freely, and escapes by a hole left in the front of the apparel for this purpose, scarcely vitiated, and which communicates with a lamp hung to the chest, so that the flame is fed and kept up by a surrounding atmosphere of almost pure air; thus, the double purpose is answered by the one means, the workman can breathe and see amidst the most noxious vapors.

It is true that this apparel is useless in certain cases. For instance, on the site of a recent fire, as no second person could here follow the wearer sufficiently closely to keep up the supply of air necessary to inject from time to time into the tube.

Since the above invention, Messrs. Grandsagne and Bassans have invented a match, which they assert will burn in the most vitiated atmospheres. To arrive at this perfection, however, this match must produce a double phenomena; it must, at the same time, procure for the flame combustible vapor, and the oxygen destined to give birth to this combustion.

To carry out this perfectly, would be impossible; Messrs. Grandsagne and Bassans, however, have done much towards it, they have invented a match which will often have this effect, but not always, under certain circumstances, and in certain places with great care, their best hopes and assertions may be fulfilled, but nature still presents her powers sufficiently strong in this branch for us to dare to say we have quite overcome her yet. Much progress has been made, and this should encourage further research. We can only say for ourselves, that we shall occasionally recur to the subject, considering it of the most vital importance, and communicate to the public each discovery in this department as it appears.—From a Belgian paper.

MR. COCKERILL, OF SERAING. MEETING OF THE CREDITORS.

On the 13th instant, a meeting of Mr. John Cockerill's creditors took place in the Court House,

	Francs.	Cents.	Total.
ACTIVE.			
Real property at Brussels	255,000	—	
" at Spa	103,052	—	423,052
" at Verviers	83,000	—	
Furniture at Liege and Brussels			30,000
Inventory of the establishment at Seraing	9,065,020	59	
" at Liege	3,055,666	61	
" at Aix la Chapelle	394,000	27	
" at Ardennes	512,632	52	14,990,214
" at Brussels	345,863	42	
" at St. Denis	1,016,961	78	
" at Cottbus	600,000	0	
Plantations at Surinam			20,827
Shares in different Societies			4,497,981
Goods delivered, not yet paid for			113,228
Goods in hand			1,171,010
ACCOUNTS IN PARTNERSHIP WITH OTHERS.			
Capitals realised	398,682	52	2,439,257
" floating	2,090,575	8	
Due on account			2,688,678
Cash in commerce, in daily use	28,831	37	54,462
Bills, &c., &c.	25,630	74	
			26,337,641
PASSIVE.			
Mortgages	5,575,103	17	
Creditors acknowledged under the disposer's own hand	11,652,483	74	17,227,387
Balance, presenting a real surplus of			9,309,855
			54

at Liege, under the Presidency of Messrs. Grandsagne and Dechamps, barristers. The meeting had been called for the purpose of taking into consideration the request of Mr. Cockerill, addressed to the King, soliciting a further extension of one year, for an ultimate arrangement with his creditors.

A full report was read to the assembly of the affairs of the insolvent. By this statement, it appears that the property has increased in value 1,250,000 francs.

Three persons opposed the demand. M. de Campagna, for the Society of the "Caisse hypothécaire," who denied the advantage of giving further time; Lunning and Cogel, of Antwerp, on the grounds that they had given up their business to a party who insisted on immediate payment; and Miss Pearson, who did not state the motives of her opposition.

M. Surmontd, a creditor to the amount of 1,400,000 francs, declared he could only consent to the measure on the condition that his son should be named one of the commissioners, and that the said commissioners should meet once a month, and furnish an account of the way in which matters were going on, to the principal creditors.

M. Bellefroid declared, if M. Surmontd's proposition was adopted, he should demand to be nominated a commissioner himself.

M. Surmontd, without noticing the observation of M. Bellefroid, went on to propose, that M. Gustave Pastor, the present director of Seraing, and consequently the person best acquainted with the affairs of that establishment, should also be named a commissioner.

M. Pastor, however, most positively declined accepting the office.

After a short discussion, the meeting adjourned.

It is highly probable, that, notwithstanding the opposition offered, his Majesty will grant the petition of the insolvent, and thus keep in employ the many many hundreds of workmen employed on the works at Seraing and Liege, and thus enable them to gain their livelihood till the probable sale to the Russian government of these establishments takes place, which, we understand, is likely soon to be brought to a conclusion.

The following is the exact state of Mr. Cockerill's affairs, brought up to the 29th of February, 1840; showing, as we have before stated, an increase of 1,250,000 frs., as compared with the original report.

	Francs.	Cents.	Total.
Real property at Brussels	255,000	—	
" at Spa	103,052	—	423,052
" at Verviers	83,000	—	
Furniture at Liege and Brussels			30,000
Inventory of the establishment at Seraing	9,065,020	59	
" at Liege	3,055,666	61	
" at Aix la Chapelle	394,000	27	
" at Ardennes	512,632	52	14,990,214
" at Brussels	345,863	42	
" at St. Denis	1,016,961	78	
" at Cottbus	600,000	0	
Plantations at Surinam			20,827
Shares in different Societies			4,497,981
Goods delivered, not yet paid for			113,228
Goods in hand			1,171,010
ACCOUNTS IN PARTNERSHIP WITH OTHERS.			
Capitals realised	398,682	52	2,439,257
" floating	2,090,575	8	
Due on account			2,688,678
Cash in commerce, in daily use	28,831	37	54,462
Bills, &c., &c.	25,630	74	
			26,337,641
PASSIVE.			
Mortgages	5,575,103	17	
Creditors acknowledged under the disposer's own hand	11,652,483	74	17,227,387
Balance, presenting a real surplus of			9,309,855
			54

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK
ENDING APRIL 18, 1840.

ENGLAND.

Not a single patent has expired during this week.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO
THE WEEK ENDING APRIL 18, 1840.

(Continued from our last.)

ENGLAND.

JOHN SWAIN WORTH, Manchester, merchant, improvements in rotary engines to be worked by steam and other fluids, such engines being also applicable for pumping water and other liquids, April 10.—According to the drawings it would be impossible to gain a perfect knowledge of this invention, which appears better adapted for raising water, than for a rotary steam-engine. The chamber of the engine is made in two parts, which, when united, inclose in the central part of the machine a wheel, that is made to receive two or more rotary valves.

JOHN BARNET HUMPHREYS, Southampton, civil engineer, certain improvements in shipping generally, and in steam-vessels in particular; some of these improvements being individually novel, and some the result of novel application or combination of parts already known, April 10.—The first improvement is in deck fastening. The planks are secured to the beams by means of screws passing from the bottom through the beams into the planks, whereby no appearance of the screws or fastenings can be observed above. In places where required, a kant-timber, or an angle iron, is attached to the beam, as a bearing for the screws to hold on the planks.

Second improvement is the fastening of plank-sheers in iron vessels.

Third improvement is a sliding keel, which is bearded for the purpose of offering a greater resistance to the water. At the bottom of the slot, which is made in the upper part of the keel, is fixed a crab-barrel, round which an endless chain passes, and in connection with a wheel on the deck; whereby the keel can be raised or lowered according to the depth of keel required. This improvement is particularly adapted to marine steam-boats.

Fourth improvement is a rudder that is jointed near the heel, for the purpose of lowering its extreme end when in a high sea; by this means, the force of any wave is not so likely to move the rudder from its fastenings.

Fifth improvement is for doubling the plates, or forming the skin of iron or metal vessels. It is well known that the power of man is not capable of working, by hammer, iron beyond a certain substance, therefore the inventor proposes to double the plates, so that the layer of one plate shall be united by a jump-joint in the middle of another plate.

The last improvement is for lining the iron with wood, and caoutchouc between them both, so as to prevent the abrasion of the paint by bilge water.

ROBERT EDWARD MORRICE, King William-street, City of London, improvements in the manufacture of boats and shoes, and covering for the legs, April 16.—The object of this invention is to do away with sewing. On the last is placed an upper or inner sole: the vacated upper leather is drawn over this by means of fine cords, and with a shoemaker's hammer, these cords are beaten flat. The outer sole, having perforated holes to admit screws, is placed next, and the screws with flat heads are used to fasten this sole to the upper or inner sole. A layer of india-rubber, or cork, may be placed between, to keep out damp or moisture.

ENTERED AT THE ROLLS CHAPEL OFFICE, UP TO
THE WEEK ENDING APRIL 18, 1840.

(Continued from page 227.)

ENGLAND.

JOHN COOPE HADDAN, Bazing-place, Waterloo-road, engineer, and GEORGE HAWKES, Gateshead iron-works, Durham, certain improvements in the construction of wheels for carriages, to be used on railways, April 16.—The first improvement is for forming the spokes of wheels with bars of wrought iron, having four obtuse bends, and the ends are brought together, forming an acute angle. These angles of the spokes are brought to a centre, where a mould is placed, and a nave of iron is cast, so as to hold them together. Another method is to form the inner part of the tire of the wheel with a groove or recess around for the reception of the heads or bends of single or compound spokes of wrought iron.

Lastly, through the holes in a rib cast on the inside of a wrought or cast-iron tire, a wrought iron bar is passed half way and bent down, so as to form a compound spoke, held together by a cast or wrought iron nave.

JOHN DICKINSON, Bedford-row, Holborn, paper manufacturer, certain improvements in the manufacture of paper, April 16.—The first improvement consists in a new mode of introducing threads into paper manufactured by machinery, during the formation of the paper, in such manner that a certain number of threads may be inserted in the body of the paper near to one side of the sheet, and other threads may be inserted at the same time nearest to the reverse side.

The wire cylinder, which revolves in the pulp, receives about midway the end of a blue thread, leading from a reel just above the cylinder; when at the bottom, the end of red thread is passed from a reel in front of the cylinder. As the cylinder revolves, the pulp forms on its surface, and the thread that is midway immediately passes over it; the bottom thread follows, and the paper is carried under the crouching roller, and on to other rollers, where it is pressed before it is passed to the drying cylinders.

The second improvement is for sizeing the paper, which is put into a receiver that is made air-tight; a tube leading from an air-pump admits forced air above the liquor, and when the process is completed, the liquor is drawn off by a cock at the bottom of the receiver.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of May 30. Each party will receive, in addition, a private communication to the same effect.

Miles Berry, Chancery-lane, due May 19.
Francis Worrell Stevens, Chigwell, Essex, schoolmaster, due May 19.

John Parsons, Stag Tavern, Fulham, victualler, May 21.

John Faram, Middlewich, Chester, May 21.
Robert and William Hawthorn, Newcastle-upon-Tyne, civil engineers, May 21.

Pierre Auguste Ducote, St. Martin's-lane, May 21.
William Daubeny Holmes, Lambeth-square, Surrey, engineer, May 23.

John Hunt, Greenwich, Kent, engineer, May 23.

FOREIGN PATENTS.—FRANCE.

A LIST OF PATENTS GRANTED BY THE FRENCH GOVERNMENT FROM NOV. 22, TO NOV. 24, 1838.

(Continued from No. 37.)

No. 174. Huerne de Pommeuse, and Janvier, Louis, of Paris, rue du Bac, No. 42, a patent of invention for 15 years, for new means, applicable to navigation and to steam, as well as on sea, as on canals and rivers, and which may be employed together or separately, Nov. 22, 1838.

No. 175. Humbert, Joseph Victor, and Sageret, Pierre Frédéric, represented at Paris by Reynaud, rue du Temple, No. 119, a patent of improvement and addition to the patent of invention for 15 years, which Humbert obtained Aug. 24, 1838, for means of preserving locomotives from the dangers to which the presence of any body on the rails might expose them, Nov. 22, 1840.

No. 176. Laurent, Louis Joseph, of Lille, département du Nord, a patent of invention for 15 years, for the manufacture of pure woollen tulle, or mixed with thread, cotton, and silk, Nov. 22, 1838.

No. 177. Leroux, Trasimède, of Amiens, a patent of invention for 5 years, for a pyrotechnic furnace and cylinder, adopted to the manufacture of exotic and indigenous coffee, Nov. 22, 1838.

No. 178. Leroy, Jean Baptiste, of Paris, rue du Four Saint Honoré, Hôtel du Frey de Dôme, a patent of invention for 5 years, for a new gas meter, Nov. 22, 1838.

No. 179. Lessage, Michel Ovide Bernard, of Paris, rue Saint Anastase, No. 11, au Marais, a patent of invention for 5 years, for a system of presses of movable and continuous pressure till the plates meet, called "Universal press," Nov. 22, 1838.

No. 180. Lombard, Leandre Moise, and Motard, Alphonse, rue du Faubourg Poissonnière, No. 66, a patent of invention for 15 years, for principles, means, and apparatus for tanning hides, Nov. 22, 1838.

No. 181. Miles Berry, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of invention, importation, and improvement for 10 years, for an improved primer for firearms, Nov. 22, 1838.

No. 182. Passenger, Robert, of London, represented at Paris by Truffaut, rue Favart, No. 1, a patent of importation for 10 years, for various improvements in the furnaces of steam-boilers, Nov. 22, 1838.

No. 183. Perpigna, Antoine, of Paris, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of invention and improvement for 10 years, which he obtained Oct. 28, 1837, for a new apparatus of a valve and piston permanent fastening, for facilitating the introduction of gaseous liquids into vessels thereunto destined, for retaining them there in the same state of interior pressure, and allowing them to escape at will either wholly or partly, Nov. 22, 1838.

No. 184. Piard, Pierre Laurent, of Colmar, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of invention for 15 years which he obtained Aug. 30, 1838, for the manufacture of stone blocks, for supports of the rails of railroads, Nov. 22, 1838.

No. 185. Poole, Moses, of London, represented at Paris by Truffaut, rue Favart, No. 8, a patent of importation for 10 years, for a new application of heat to smelting ores, metals, and other mineral substances, and likewise for heating steam-boilers: also applicable to other purposes, Nov. 22, 1838.

No. 186. Rotch, Thomas Dickason, of London, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of importation and improvement for 15 years, for improvements in the manufacture of soaps, Nov. 22, 1838.

No. 187. Schwickardi, Gaspard, rue de la Pompe, No. 4, Passy, precincts of Paris, a patent of invention

for 15 years, for a solid, economical, and incombustible timber-work, Nov. 22, 1838.

188. White, James, of London, represented at Paris by Truffaut, rue Favart, No. 8, a patent of importation for 15 years, for a new method of burning smoke in furnaces, and of applying steam, in combination with warm air, to smelting furnaces, Nov. 22, 1838.

189. Beslay, Charles Victor, of Paris, rue Charlot, No. 18, and Rouen, Pierre Isidore, of Paris, rue du Temple, No. 137 bis, a patent of improvement and addition to the patent of invention, improvement, and importation, which they obtained April 7, 1838, for new processes and apparatus for manufacturing and applying carburetted hydrogen gas to illuminating purposes, Nov. 24, 1838.

190. Boutevillain, Louis Felix, represented at Paris by Reynaud, rue du Temple, No. 119, a patent of invention for 10 years, for mechanical means applied to the manufacture of ornamented irons, by which results are obtained that were previously effected only by forging, and which means are applicable to other metals, Nov. 24, 1838.

191. Chouliou, Charles Marie, jun., of Paris, rue Saint Honoré, No. 75, a patent of importation and improvement for 5 years, for a new process of cutting out, by machinery, gloves and mittens of skin and tissues of all forms and qualities, Nov. 24, 1838.

192. Cody, Pierre, of Strasburg, a patent of invention for 10 years, for an apparatus on an improved inclined plane, for concentrating liquids, acting by steam at different pressures, Nov. 24, 1838.

193. Dulery, Renault, of Paris, rue du Faubourg Saint Martin, No. 176, a patent of invention and improvement for 15 years, for processes of manufacturing bituminous mastics, called "mastic Dulery," and for various applications of them, Nov. 24, 1838.

194. Dunand, Maurice Antoine, of Paris, rue du Petit Thouars, No. 23, a patent of invention and improvement for 10 years, for new arrangements of lamps with syphon regulators, upon the principle of Héron's fountain, Nov. 24, 1838.

195. Gernon, Pierre Georges Irénée, represented at Paris by Reynaud, rue du Temple, No. 119, a patent of importation and improvement for 5 years, for a new system of steam generator, Nov. 24, 1838.

196. Gossage, William, of Stoke Prior, England, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of importation and improvement for 15 years, for improvements in the manufacture of sulphuric acid, Nov. 24, 1838.

197. Kieniewitz, Felix, of Saint Ruffin, arrondissement de Metz, département de la Moselle, a patent of invention for 5 years, for a process of manufacturing candles with wicks and hollow (à jour), Nov. 24, 1838.

198. Labarthe, Charles, of Paris, rue de la Michodière, No. 4, a patent of improvement and addition to the patent of invention for 15 years, which he obtained Oct. 30, 1838, for 1st, a discovery in all kinds of bark, and in many land and marine plants, of a substance applicable to manufactures, and which he calls cortesine; 2dly, the mode of treating these plants or bark, and thereby extracting from them the said substances; 3dly, the application of cortesine in the manufacture of paper, felt, military hats, and to various other purposes, Nov. 24, 1838.

199. Leavers, Thomas, of Rouen, avenue de Caen, No. 40, and Vallée, Amédée, of Maromme, département de la Seine Inférieure, a patent of invention for 5 years, for a machine for preparing flax and forming it into threads to be passed on the loom, in order to be spun fine, Nov. 24, 1838.

200. Leistenschneider, Ferdinand, of Pellesey sur Ignois, département de la Côte d'Or, a patent of invention for 10 years, for an economical drying apparatus, for drying paper in manufacturing it, Nov. 24, 1838.

201. Lindsay Ormeby, John, of Paris, rue Cau-martin, No. 29, a patent of importation for 10 years,

for improvements in window, carriage, and other blinds, called "stores calorifuges," Nov. 24, 1838.

202. Maréchal, Jules, and Co., of Paris, rue de la Planche, No. 20, a patent of improvement and addition to the patent of invention and improvement for 15 years, which they obtained Oct. 30, 1838, for an additional means of retaining filtering substances in the interior of filters, Nov. 24, 1838.

203. Maréchal, Jules, and Co., of Paris, rue de la Planche, No. 20, a second patent of improvement and addition to the patent of invention and improvement for 15 years, which they obtained Oct. 30, 1838, for an additional means of retaining filtering substances in the interior of filters, Nov. 24, 1838.

204. Moreau, Félix, of Paris, rue Notre Dame des Champs, No. 46, a patent of invention for 5 years, for a method of executing sculptures, engravings, castings, columns, bases, capitals, vases, &c., by mechanical means, in hard substances, such as porphyry, granite, marble, stone, &c., Nov. 24, 1838.

205. Pezerot, Pierre Joseph, of Paris, rue Montholon, No. 13, a patent of invention and improvement for 15 years, for the manufacture and use of a bitumen called "granitique," Nov. 24, 1838.

206. De Saulcy, Félicien Marie Joseph Caignart, of Rouen, rue de la Seille, No. 16, a patent of invention and improvement for 10 years, for a new apparatus, by means of which any movable sun-dial may be made to show the mean as well as the true time, Nov. 24, 1838.

207. Sausse, Louis, of Etoile, département de la Drôme, a patent of invention for 10 years, for a new threshing machine, Nov. 24, 1838.

208. Tessier, Joseph, represented at Paris by Charles Reynaud, rue du Temple, No. 119, a patent of addition and improvement to the patent of invention for 15 years, which he obtained June 13, 1838, for improvements in safety locks and bolts, Nov. 24, 1838.

(To be Continued.)

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

MEETING OF THE GRAND JUNCTION RAILWAY COMPANY.—On Saturday, a meeting of the Grand Junction Railway Company was held at the Cotton Sales Room, Liverpool, for the purpose of taking into consideration the incorporation of the Chester and Crewe Railway with the Grand Junction Railway Company. John Moss, Esq., in the chair. . . . The Chairman briefly explained the object of the meeting. . . . Mr. Swift, the company's law clerk, then read the heads of the proposed bill, which vested the whole of the property of the Chester and Crewe Line in the Grand Junction Company, the latter undertaking to meet all the engagements of the former, and to complete the line. . . . It was moved by Mr. Tayleur, and seconded by Mr. Haigh, that application be made to parliament for an act embracing the above objects, which was carried unanimously. . . . The Chairman directed the attention of the meeting to a statement put forth by Mr. Bury, the effect of which was to show that the expense of the locomotive power on the Grand Junction Line was greater than the expense of the same power on the London and Birmingham Line. Mr. Locke, their engineer, being present, would be glad to afford the meeting any explanation on the subject. . . . Mr. Locke said that the statement alluded to made it appear that the expense of the locomotive power on their line exceeded by £17,000. a year, the expense of the same power on the London and Birmingham. Nothing could be more fallacious than the data on which Mr. Bury based his calculations. The two lines were essentially different. In their gradients the London and Birmingham had an advantage over the Grand Junction, but then look at the cost of the respective lines. In proportion to the excellence of the gradients would the cost of locomotion be dimi-

nished. But the Grand Junction was a longer line than the other, taking into account the traversing of the engines between Manchester and Warrington; it had stationary engines at Warrington, Stafford, and other parts of the line, whereas there was not a single stationary engine on the London and Birmingham, so that if any accident occurred on the latter, an engine had to proceed fifty miles before it could be discovered. Mr. Locke proceeded to show that all these different circumstances in the relative position and workings of the two lines, had been overlooked. If they (the company) contemplated a change in their locomotive power, he was prepared to show them that no reliance could safely be placed on the statement on which he had been commenting. . . . The Chairman stated that the object of the Grand Junction directors had always been to have the best locomotive power, and they could not certainly be induced to change their system on the showing of Mr. Bury. . . . A Proprietor stated that the directors of the London and Birmingham Line were not to be held responsible for the statement of Mr. Bury. It was his own individual act, and three-fourths of the directors had never seen it. . . . Thanks were voted to the chairman, and the meeting separated.—*Liverpool Standard*.

GREAT WESTERN RAILWAY.—The Bristol directors have been taking measures which, it is hoped, will secure the opening of their division, and consequently of the entire line, in the summer of next year.—*Bristol Mirror*.

SHEFFIELD AND MANCHESTER RAILWAY.—We understand that this important line of railway is at length about to be proceeded with in earnest. It is expected that the whole of the distance between Manchester and Glossop will be under contract during the present summer, and we think that if the directors are supported in their efforts by the shareholders, and supplied with funds to enable them to press forward the works with energy and spirit, they may succeed in completing and opening to the public that portion of the line in the course of the summer of 1841, and thus secure at once a large and profitable traffic between Manchester and the populous manufacturing districts of Ashton, Staly Bridge, Mottram, Glossop, &c., besides that which they will derive by shortening the difficult road journey between Manchester and Sheffield.—*Liverpool Standard*.

SOUTH-EASTERN AND DOVER RAILWAY.—A report has been industriously circulated by a contemporary, that a great number of men have been discharged from the tunnel works of this railway in our neighborhood, which is calculated to create a suspicion that the company is in difficulties. We are happy, however, to be enabled to find, on the most minute inquiry, that such a presumption is entirely devoid of foundation. It is true that a few bricklayers have been discharged owing to a limited supply of bricks on the part of the contractor; but at the same time nearly 200 additional men have been set on at the contracts extending from Abbot's Cliff to Folkestone. On a personal inspection, we find the work in a most promising condition. The Shakespeare tunnel will, we doubt not, be completed by the end of May. A large portion of the sea wall is nearly finished, and the Warren contracts are proceeding as well as the nature of the ground will permit. We have seen the model of the bridge now constructing at Folkestone, and it will be, in our opinion, when finished, a substantial and elegant erection.—*Dover Chronicle*.

GREAT NORTH OF ENGLAND RAILWAY.—The key stone of the last arch of the new Oblique Bridge across the river Tees, at Croft, on the line of this railway, was placed in its proper bed on Thursday last, by G. H. Wilkinson, Esq., the chairman of the directors, in the presence of several of the other directors, and a large concourse of spectators. The foundation-stone of the bridge was laid in the month of May 1838, and the bridge is now rapidly approaching its completion. After the stone had been placed, and three times three cheers given for the success of the great undertaking, of which the

chairman very appropriately remarked this bridge formed one of the most important features, Henry Welch, Esq., of this town, the engineer of the bridge, invited the directors and several of his friends to partake of a splendid *déjeuner* at the Spa Hotel, where success to the undertaking was again drunk, and all present expressed their entire approbation of the beautiful structure, now so nearly completed. The bridge consists of four oblique arches, built at an angle of 50°, each arch measuring 60 feet on the oblique face, which is, we believe, by far the largest structure of the kind that has been built of so acute an angle.

PRESTON AND WYRE RAILWAY.—The works of this railway, opening into Preston, are in a state of very active progress. Within the last few weeks, an immense quantity of brickwork has been erected on this portion of the line. We understand that an idea is entertained of the railway being ready for opening in the course of the ensuing summer. So far as we can judge, however, there is no prospect of this being realised.—*Preston Chronicle*.

On Thursday much consternation was felt on the line of railway now cutting from Croydon to Brighton, by the falling in of a part of the embankment at Horley, in Surrey, by which three men were covered in by an immense weight of earth, and great and general fears were entertained that their lives would be sacrificed before effectual measures could be adopted for their release. As soon as the alarm resulting from so serious a calamity had in some degree subsided, men were instantly set to work, and in a very short space of time the whole of the persons were taken out, two of them without serious injuries, but the third with his shoulder fractured. Every attention was paid to them, and they are doing well. On Saturday a similar accident happened at Croydon, but unfortunately attended with the loss of one life.

EDINBURGH AND GLASGOW RAILWAY COMPANY.—We are glad to find that the Edinburgh and Glasgow Railway Company are likely to be allowed an opportunity of introducing a new bill in place of that which was thrown out by the decision of the House of Commons a few weeks ago—the obnoxious clauses being of course expunged.—*Railway Times*.

EDINBURGH AND GLASGOW RAILWAY.—The whole line—46 miles—is now contracted for. Both the Ayrshire and Greenock railways will be tributary to the Edinburgh and Glasgow. The counties of Lanark, Ayr, Renfrew, Dumbarton, Stirling, and two of the Lothians, will thus be permeated, affording a new channel for the rapid transit of their people, and of the produce of their industry; and developing the energies, the wealth, and the enterprise of the principal counties of Scotland.—*Edinburgh Paper*.

THE DUNDEE AND ARBROATH RAILWAY was formally opened to the public the week before last. The authorities of the terminal towns and the inhabitants generally, took much interest in the proceedings. The line has been in partial operation for the last eighteen months, and we understand that there is every prospect of the most brilliant success.—*Railway Times*.

RAILWAY INTO SCOTLAND.—The commissioners are, we believe, still employed in selecting an inland route for the connecting line of railway between England and Scotland. It seems now to be understood that the east coast line is entirely given up by the commissioners, and the Morecambe bay line scarcely less so. From the nature of the inquiries put by the commissioners, it is supposed they have not yet made up their minds as to the comparative superiority of the line recommended by Mr. Locke, up the Lune, and that through Kendal. The principal object in the way of the latter line is the formidable tunnel through Longsleddale; and if the engineering difficulties should appear to the commission to be in reality less than they have been represented, it is generally supposed that the Kendal line will be the one recommended. The certainty that a west coast line, beginning at

Lancaster, will be recommended by the commissioners, as the best connecting link between England and Scotland, begins to exercise a most favorable effect upon the Lancaster and Preston Railway shares, which, like the North Union, will no doubt soon be at a premium.—*Lancaster Guardian*.

FRENCH RAILROAD BILL.—Art. 1. The Minister of Public Works is to be authorised to take, in the name of the state, any amount of shares in the Paris and Orleans Railroad, not exceeding two-fifths, but no money is to be paid until the other three-fifths have been paid up and employed. Art. 2. The state is to receive no dividend until the other shareholders shall have received 4 per cent. After this the state is to have 4 per cent. for its capital; of the surplus, after this interest, the state is to have one-fourth, and the shareholders three-fourths. The reserve, which may eventually be distributed, is to be divided between the state and the shareholders in proportion to their investments. Articles 3 to 6 are merely the ordinary details of execution. Art. 7 authorises the minister to take three-tenths of the capital of the railroad from Strasburg to Basle. Art. 8. No payment is to be made by the state until M. Kœchlin shall have expended a sum proportioned to the amount paid into his hands by the other shareholders. Articles 9, 10, 11, 12, and 13, are of the same nature as 2, 3, 4, 5, and 6. Art. 14 authorises the Minister to lend 4,000,000 of francs, at 4 per cent. interest, to the railway company of Andrézieux to Roanne, as soon as it shall have been legally constituted. The other articles stipulate the mode and periods for advancing the money. Art. 21 authorises the Minister, in the name of the state, to expend 14,000,000 of francs for the construction of a railway from Montpellier to Nîmes, in communication with the railroad from Montpellier to Cette, and with that from Alais to Nîmes and Beaucaire. By article 22 the state is authorised to expend 6,000,000 for the construction of a railroad from Lille to the Belgian frontiers, and 4,000,000 for a railroad from Valenciennes to the Belgian frontiers. The other articles to 26 are details of execution. Art. 26 authorises 23,000,000 of the total amount of 56,000,000 for the different enterprises to be taken on the estimates of 1840 and 1841, as follows:—

1840.	
Strasburg to Bale.....	fr. 4,000,000
Andrézieux to Roanne.....	2,000,000
Montpellier to Nîmes.....	1,000,000
Lille and Valenciennes to the frontier of Belgium.....	3,000,000
	—
Total.....	10,000,000
1841.	
Paris to Orleans.....	8,000,000
Strasburg to Bale.....	3,000,000
Andrézieux to Roanne.....	2,000,000
Montpellier to Nîmes.....	3,000,000
Lille and Valenciennes to the Belgian frontier.....	6,000,000
	—
Total.....	23,000,000

The bill was ordered to be printed and distributed amongst the members.

CONTINENTAL RAILROADS.—On the other side of the Rhine there are 200 leagues of railroads either already brought into use, or on the point of being so. Further undertakings, some of which have obtained a guarantee of the minimum of interest, will afford conveyance by this means to the extent of 400 leagues more, within a few years. Of the lines finished, or near being so, those in Holland run 30 leagues, Prussia 51, Austria 50, Bohemia 18, Bavaria 18, Saxony 20, Frankfort, Nassau, and Darmstadt 11, Brunswick 2½, Duchy of Baden 4 leagues. Most of these roads have only one line of rails.

The *Händelsblad* mentions that a trial was made a few days since on the Amsterdam and Haarlem Railroad, which is a perfectly level surface, of a locomotive engine with only its tender attached, made by Messrs. Longridge and Co., of Newcastle-on-Tyne, to ascertain its maximum speed. The

engine, which is named the *Snelheid*, went over a space of 2,000 Dutch ells in one minute twenty-six seconds, being at the rate of 54 miles English per hour!

RAILWAY TRAVELLING VEHICLES COACHING.—TAVERN PROPERTY.—For some months past, there has been only one Bath coach proceeding direct from London to that city by the old road, without the proprietors availing themselves of the railway. Since the opening, however, of the Great Western line as far as Reading, that conveyance, known as "the York House coach," has been taken off the "old beaten track," now proceeding by the rail between Reading and London. The innkeepers on the road throughout the whole distance, as far as the railway has been completed, are starving;—trade, with them, is in a state of utter stagnation, and tavern property has, within the last two or three years, been reduced in value from sixty to seventy, and in many instances (especially at Egham) eighty per cent. In fact, there are many first and second-rate inns which may be had at a nominal rental; but notwithstanding these proffered advantages, there is not sufficient trade left to realise a profit to cover the amount of taxes. There are several excellent hotels wholly closed, and many others will be shortly abandoned.

VARIETIES.

British Museum.—Upwards of thirteen thousand persons visited this National Institution on Easter Monday.

The Bishop of Norwich, President of the Linnean Society, has issued invitations to the Fellows, for his conversations, on Friday, April 24th, May 29th, and June 26th.

Belgium.—The British House of Commons has just presented the Chamber of Representatives with a superb collection of parliamentary documents of the years 1834, 1835, 1836, and 1837, consisting of 217 folio volumes, magnificently bound, and gilt-edged. Exchanges of legislative documents between the representative assemblies of constitutional countries cannot be too much applauded; they must necessarily awaken every where attention to the improvements going on in other countries, stimulate ameliorations at home, and be the means of obviating much research, labor, and expense.

We learn from Dresden that the learned and zealous missionary Zwick, who has visited the greater part of China, and who is now on his travels in the British East Indian possessions, has sent a present to the King of Saxony of the following objects, all of which have arrived quite safe:—

1st.—A collection of models, in porcelain, of all the utensils which are employed in the rites of the religion of Buhdha, such as altars, chalices, incense vessels, mirrors, crowns and wreaths of mystic flowers, gongs, drums, trumpets, cymbals, bells, &c., the greater number of which are covered with ornaments in relief.

2d.—Thirty-six figures in bronze gilt, from 2 to 18 inches in height, representing Buhdha and the other divinities adored by this sect.

3d.—Eighteen large pictures, in tapestry, which represent the principal religious and political ceremonies of the Chinese people.

4th.—Fifty-seven fine manuscripts in the Chinese, Thibet, and Mongol tongues.

The models are exhibited to the public in the show-rooms of the Royal porcelain manufactory at Dresden, and explained by De Klemmer, the curator of the Royal Library.

Mr. Twick has written from Calcutta to announce his intention of transmitting, by the very first opportunity, a collection of above 400 vases and small figures in baked clay, which the *sarans* of Germany await with the utmost anxiety.

Mr. Henry Davey, who a short time since entered into a contract with the French government for the salvage of the *Republican*, wrecked in 1793

on the Maingan rock, has just anchored in the Brest roads with his cutter, the *Eliza*. In a few days he will commence operations, by means of a diving apparatus, for which he has taken out a patent of invention in France; four of his men have already effected several salvages, among which may be cited the *Finistere*, and her cargo of tin, lost off the coast of Conquet.

M. Arago has proved to the complete satisfaction of the French nation, that the application of steam-power to navigation was imagined and executed first in France; that the first steam-boat ever constructed was made to ply upon the Saône, in 1782; and that the merit of this grand discovery was due to the late Marquis de Jouffroy, the father and preceptor of the inventor of the "Palmedpedic apparatus, applicable to vessels of all kinds," of which we gave a short notice in a former number.

With respect to this last invention, a schooner may be seen every day upon the Seine, furnished with this apparatus, and ready to start for a Transatlantic voyage.

The King of France has just sent to the widow of the late Doctor Marc, a gold medal, as a testimony of the high esteem he ever felt for his first physician. The medal represents on one side the King's effigy, and on the other these words, "Offert par le Roi, en souvenir du bon Docteur Marc." His Majesty has also settled on the widow a pension for life.

The statue of Gretry is advancing very slowly, the mould for the head not being yet begun. The little episode of Greek history of the cobler giving his opinion on the manner in which Apelles shod the principal personages of his pictures, was recalled to our recollection the other day by another of the same fraternity, who, examining the foot of Geef's statue of Rubens, shrugged his shoulders, and remarked that they had forgotten the welt and quarters, adding that unless the painter wore india-rubber shoes (not very probable in those times), he never could have got his feet into them.

The cannon foundry never was in such activity as at the present moment. This will not appear astonishing when it is known that, for the Bavarian government alone, they are executing an order for 280 pieces of iron ordnance. Our iron foundry for these arms appears to be superior to those of Sweden and England, since a number of experiments made by the Bavarian officers charged with observing the process of their manufacture, and testing their qualities, have led to the most satisfactory reports to their government.—*Liege paper*.

Statistics of St. Petersburg.—The following is from the *State Gazette* of Prussia:—"Of the 476,386 inhabitants of St. Petersburg, there are 200,000 more men than women. There are in the capital 1,123 ecclesiastics, 1,232 general officers, 19,474 foreigners, and 238 actors and actresses. The number of houses is 8,665, of which 5,105 are built of wood. There are 41 chemists, 4 sounding hospitals, 6 charitable institutions, 33 Government and 37 private printing offices; 2,572 shops, and of these 181 are milliners and dress-makers, 38 confectioners, 92 taverns, and 191 bakers. There are 4,411 street lamps, of which 144 are lighted by gas; 304 police stations, about 8,000 carriages, 11,000 hackney-coaches, and 36,000 horses."

The Channel Islands.—The *Guernsey Star* says, "The rumor gains ground that the Southampton Railway Company intend placing three steamers on the station to run to the islands and St. Malo. It is also reported that the contemplated transfer of the mail packets from Weymouth to Southampton forms a part of these arrangements, it being probable that the Company will contract with the Post-office for the conveyance of letters to the islands."

Count Théophile de Loheren, who died lately at Vienna, at a very advanced age, has bequeathed, it is said, the whole of his valuable collection of books and manuscripts, under certain conditions, to the National Library at London. Though of Westphalian birth, this nobleman was of British extraction.

tion, his mother having been grand-daughter to the Grand Maréchal Count De la Feld, an Englishman in the imperial service, who received the highest distinctions from Leopold I. and the Elector Frederick William. Count de Loheren acquired a great addition to his collections at the death of his maternal uncle the late Cardinal Von Kaffelin, who resided many years in Rome, as Bavarian Minister at this Court, in the pontificate of Pius VII.—From the *Diario di Roma*.

A Volcano in the Sea.—Extract of a Malta letter, of the 6th inst., in the *Sémaphore*:—"The captain of an English schooner lately arrived reports that, on passing near the spot where, in 1831, an island rose out of the sea, between Sicily and Pantaleria, he saw a column of smoke issuing from the water. Admiral Stopford immediately sent the Hydra steamer to make observations. On her return two days ago, Captain Robinson reported that, on sounding, he found between sixty and eighty fathoms of water, which proved that the bottom was even lower than formerly. As the volcano, however, is still evidently at work, it will be well for all ships to steer clear of its site. The Benbow arrived on the 3d from Smyrna, and found here the Princess Charlotte and Bellerophon. On the same day the Jaseur brig came in, and yesterday the Tyne frigate. The Caryfort frigate has left us for Terragona, to make a last effort to get off the hull of the Tribune."

Scientific Necrology.—The world of science has sustained a heavy loss in the death, at Bremen, of the celebrated astronomer Olbers, at the advanced age of 81. He was a member of most of the European learned societies, and the author of many important contributions to the progress of modern astronomy. Letters from Alexandria mention likewise the death of the well-known French engineer, M. Lefevre, travelling correspondent to the Museum of Natural History in Paris. He died at Mahomed-Ali-Polis, in Senaar, in October last, having gone hither commissioned by the Egyptian government to search for the metallic mines supposed to exist in Senaar. While busy with these obituary records, we may mention the death, at Paris, of Dr. Biett, head physician to the hospital of St. Louis, and a person of great eminence in his profession for all the qualities which can render its members the benefactors of their kind. His courage and devotion in the fearful times of the cholera will be long remembered; and having, by his unwearied humanity and generous sacrifices, worn out his constitution, and laid himself on a death-bed at the age of 56, surrounded by the most distinguished professional brethren, he made his own disease a valuable study for their use, predicting the day and hour of its final struggle, and died amid the most intense suffering with the calmness of a stoic and the hopes of a martyr.—*Athenaeum*.

Sawn Slate Pavement.—Experiments have been made to ascertain the applicability of slate to other uses than the covering of houses. The result has been the discovery that, as a material for paving the floors of warehouses, cellars, wash-houses, barns, &c., where great strength and durability are required, it is far superior to any known material. In the extensive warehouses of the London Docks it has been used on a large scale. The stones forming several of the old floors, having become broken and decayed, have been replaced with slate two inches thick; and one wooden floor, which otherwise must have been relaid, has been cased with slate one inch thick, and the whole have been found to answer very completely. The trucks used in removing the heaviest weights are worked with fewer hands. The slabs being sawn, and cemented closely together as they are laid down, unite so perfectly that the molasses, oil, turpentine, or other commodity which is spilt upon the floor, is all saved; and as slate is non-absorbent, is so easily cleaned, and dries so soon, that a floor upon which sugar in a moist condition has been placed, may be ready for the reception of the most delicate goods in a few hours. Wagons or carts, containing four or five tons of goods, pass over truck-ways of two-inch slate without making the slightest impression. In no one

instance has it been found that a floor made of sawn slate has given way; in point of durability, therefore, it may be considered superior to every other commodity applied to such uses. The consequences of this discovery have been, that full employment is found in the quarries which produce the slates, and that additional employment has been given to the British shipping engaged in the coasting trade.—*Penny Magazine*.

South Australian Birds and Flowers.—A writer in the *Adelaide Guardian* thus defends the birds and flowers of South Australia from a common imputation. Among the most notorious of the erroneous ideas which have prevailed relative to South Australia, is the senseless one that here "the flowers are without savor, and the birds without song." Who the nose-less, ear-less individual was, who emitted the above assertion, would be too much to task the brain in recollecting. It is astonishing how much it is credited: in fact, it is never doubted. If we boast of our birds of splendid plumage, "Oh! but they don't sing," is the sharp and ready rejoinder made by way of humiliating our pride; and if we presume to dwell with rapture on our fields of flowers, equally sharp is the retort—"Oh! but they don't smell." Birds without song! Surely some of our parrot tribes sing, and beautifully too. Even the thrush family alone would redeem the country from the stigma. But if the libel against the birds be untrue, what must it be against the flowers? The poor, dumb, sweet flowers have no voice to raise in their own defence. But there is an eloquence in their very silence more impressive than a thousand tongues. Even now, in spring, how numerous are the sweet-scented flowers that surround us in all directions—the lowly but lovely sunleys—the various hyacinths—the knappaliums, and a hundred others. Why, in this land the very leaves are loaded with perfumes. Even now, as we are writing, every wave of a blossom-covered gum wattle fills our hut with its odor.—*Australian Record*.

India Coal.—Dr. Hutchison, of the Madras artillery, has drawn up a report on the coal-fields recently discovered in the vicinity of Mergui, by which it appears that this coal is easy of access, lying at no great depth beneath the surface, so that shafts may be sunk without difficulty. For its conveyance, there seems to be every facility; the river being adjacent, and a land carriage of one mile only being required. It is not stated whether the quality of the coal has been tested by experiment, but we presume it to be the same of which Dr. Heifer spoke so highly in his communications. Steamers will begin to ply between the different ports in the bay of Bengal; and the immediate coal depots between the Presidencies and Suez will be more plentifully supplied, and at a cheaper rate. The effect these circumstances will produce on the destinies of India can scarcely be estimated.—*East India Magazine*.

The Weather in the West.—For some few days past, the weather has been of the most propitious character. A genial warmth, such as we experience during the finest Midsummer months in this northern climate, pervades the atmosphere. Everywhere, so far as the scope of our observation extends, the shrubs and trees are rapidly bursting into foliage, in verification of the beautiful lines, that

"The woods shall hear the voice of Spring,
"And flourish green again."

Hoary winter has been succeeded by the blythe-some smiles of vernal spring, and universal nature rejoices in the auspicious advent of the milder seasons. The temperature yesterday was as high as it was at any period during the month of July last year. Consequently, agricultural operations are going forward uninterruptedly and successfully. The husbandman is looking towards the completion of his labors in the spirit of hope and gratulation—a hope that all appearances conspire to justify. It will be observed, that the favorable state of the weather has already had an effect on our local grain markets, the prices indicating a downward tendency.—*Glasgow Courier*.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the undermentioned places:—

Antigua	Demerara	Montserrat
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Bermuda	Greece	Quebec
Brazils	Grenada (New)	Spain <i>etc</i> Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburgh	St. Kitts
Canada	Helioland	St. Lucia
Caraccas	Honduras	St. Vincent's
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It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of twopence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their News-men, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE" will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 9, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"C. G."—Our Correspondent's queries have been carefully considered; he is quite correct in all his views. To carry them out effectually, must of course rest with himself.

"J. Everett," Salford.—The experiments you propose making with a view to perfect your invention, should not be made, by any means. There is no doubt whatever, that if so made, they would be such a publication and user of the invention, as would render a subsequent patent void.

"R. Janson," Oxford.—If the specification be not enrolled within the limited time, the patent will become void, but no penalty will attach on the omission.

"W. Jacobs," Bath.—No; the 2d Victoria, c. 17, s. 1, makes an especial exception in favor of lace.

"E. Meredith."—Assuredly not. Such an act would prejudice your right.

"A. B."—The article, headed Pneumatic Experiment on the Birmingham, Bristol, and Thames Junction Railway, in our last, was extracted from the Railway Magazine.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE
INVENTORS' ADVOCATE,
AND
JOURNAL OF INDUSTRY.

SATURDAY, APRIL 25, 1840.

In another part of our Paper is inserted a description, never before published, of a NEW MOTIVE POWER, which the inventor feels confident may be carried out to an *almost unlimited extent*. Of course, having published the details and particulars of the invention, Mr. Samuel CARSON, the inventor, (a native of the Sister Isle) may expect to be questioned by engineers and other scientific individuals, touching the truth of the laws he has laid down. Any communications we may receive on the subject will be immediately laid before Mr. Carson, who, doubtless, will give them careful consideration, and reply to them through the medium of our columns.

This important question once agitated, will not, we feel assured, be lost sight of.

THE ATTEMPTS TO PRODUCE A PERPETUAL MOTION.

There are few objects on which so much time and money have been thrown away as in the fruitless attempts to construct a machine that will move for ever. Patent after patent has been taken out with a view to secure the exclusive right to inventions in which it was falsely imagined the desired object had been attained. A description of all the inventions for the purpose of procuring perpetual motion would, indeed, present a curious record of ignorance, fallacious reasoning, and misdirected ingenuity. A knowledge of the simple principle in mechanics, that action and reaction are always equal, and in opposite directions, would have saved an infinity of time and expense; for we believe that most of the contrivances for producing perpetual motion, have been founded on the erroneous notion that the action of a moving body may be so modified as to produce a greater or less amount of reaction.

The loss of motion occasioned by friction, must always be a bar to the accomplishment

of perpetual motion by any machinery in which the moving parts touch. A pendulum vibrating in a vacuum, would otherwise present an example of perpetual motion; but by whatever contrivance the rod of the pendulum is supported, for the avoidance of friction, a small quantity of motion will be lost by the surfaces rubbing on each other, and the pendulum will, at length, come to a state of rest. The continuance of the motion would also gradually wear away the substance of which any machinery with touching surfaces was constructed; and, even supposing some everlasting principle of action to be imparted to it, this inherent defect, to which all matter is subject, would ultimately put a stop to the motion.

It has been observed, by a well-informed writer on this subject, that "to make a perpetual movement, it appears necessary that a certain system of bodies of a determined number and quantity should move in a certain space for ever, and in a certain way and manner; and for this, there must be a series of actions returning in a circle, otherwise the movement will not be perpetual; so that any action by which the absolute quantity of force is increased, of which there are several sorts, must have its corresponding counteraction, by which the gain is destroyed, and the quantity of force restored to its first state." One of the actions by which "the absolute quantity of force is increased," is the accelerated motion gained by falling bodies; and this increase of motion, it may be conceived at first view, might be so applied as constantly to afford a renewed source of motion. It is easily shown, however, by the action of the pendulum, that the increased velocity gained by falling from a given height, is only sufficient to carry the body to the height from which it fell; without making any deduction for friction or the resistance of the atmosphere.

It must be evident, that in any rational attempt to obtain a perpetual movement, we must have recourse for our moving power to some constantly acting energy external to the machine itself, and the directions or force of which we are enabled to vary.

It has been frequently attempted to apply the power of gravitation for this purpose, but as that power acts equally on the whole mass of matter in the earth, its force cannot be varied nor its direction changed, by any means within the limits of human capability. All attempts, therefore, founded on that principle, have necessarily failed. Voltaic

electricity, however, furnishes a source of action well adapted for the purpose of obtaining an approximation to, if not the actual attainment of, a perpetual motion. The properties of attraction and repulsion which the opposite poles of a voltaic pile possess, and the facility with which the electricities of the two poles can be transmitted and changed, render that peculiar action well adapted for application as a continuous moving power.

There is no reason to doubt that electricity is as constantly in operation in nature as the power of gravitation; and possessing, as we do, the means of disengaging and concentrating it for an unknown duration of time, without any sensible decomposition of the materials employed, the moving power for perpetual motion may be considered as already obtained. On this principle, a small apparatus has been constructed, that is kept in action by means of dry voltaic piles, and has been in continuous motion for several years. How long such an apparatus would continue to move, it is impossible to tell; but, allowing the source of motion to continue unabated, even its movement would ultimately cease, owing to the wearing away of the pivot on which it is balanced.

The construction of any machine that will keep in motion for ever, appears, therefore, to be absolutely impossible. One great point, however, has been attained; that of inventing an apparatus that will keep in action without the application of any visible external agency. Beyond this, the most sanguine of the perpetual-motion-projectors would scarcely have extended their expectations; for the necessary destruction of the materials by constant wear, seems to present the only limit to the continued movement caused by voltaic action.

PATENT MONOPOLIES.

There exists, we believe, a popular prejudice against the exclusive privileges granted to patentees for the manufacture and sale of their inventions. This prejudice is founded on the dislike to monopolies which is prevalent amongst all classes, and takes its rise from the unjust and impolitic exclusive privileges that were formerly bestowed as acts of Royal favor, and were generally granted to Court favorites who were odious to the people. Some relics of these impolitic monopolies still exist in different parts of the country, and wherever they are exercised they never fail to excite discontent and strife. The statute of the 21st James I., which con-

stitutes the foundation of the Patent Laws of England, was passed for the purpose of remedying the evil of the exclusive grants of monopolies by royal favor, and limited all such privileges to new manufactures, and the duration of the monopoly to fourteen years. Some share of the odium which attaches to the possessors of arbitrary monopolies, still, however, is borne by the patentees of new machinery; and, though they are most rigidly dealt with by the government and the law, and are taxed enormously for the protection afforded, they are frequently grudged the comparatively short privilege they enjoy, as if they had no natural right to possess it.

Nothing can be more distinct, in its nature and effects, than a monopoly of any general trade and that privilege which is granted to the inventor of a new machine, as a reward for his ingenuity, and a recompence for the time and money he has spent in bringing it to perfection. The former is, in most cases, a direct injury to the public, and may be regarded as an appropriation of public property. The monopoly granted to a patentee, on the contrary, merely secures to him the fruits of his own invention, and gives him the exclusive right, for a limited period, to property of his own creation—a property that had no previous existence; to which the public has no claim, and to which he has a stronger natural right than any landed proprietor has to the estates he inherits. In the case of a patent monopoly the public can receive no injury, for the exclusive privilege is granted solely on the condition that the invention is one not before known or exercised; consequently, if it can be shown that the invention is not new, the patent is invalid, and the injury is sustained entirely by the patentee, who receives no compensation for the money, stamps, and fees he has paid to the government for a protection which has proved of no avail.

When the nature of a discovery or invention enables the inventor effectually to conceal the improved process of his manufacture, he would derive no advantage from taking out a patent for its exclusive use. In such a case, he enjoys a monopoly even more complete than if he had obtained patents in all parts of the world; but, in taking advantage of his ingenuity in this secret manner, he would excite no ill will; it would be regarded as a fair and legitimate proceeding, and no one would consider him as a monopolist. (The inventor might, in such circumstances, have the benefit of his discovery for three times

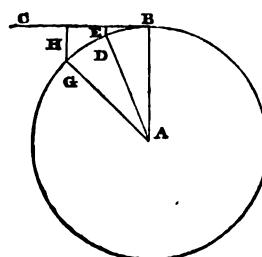
the duration of a patent privilege; and however valuable to the public, it might be entirely lost on his death. In this case, there would be no monopoly, in the strict sense of the term; it would be merely the application to his own advantage of the product of his knowledge and ingenuity. Yet, let the same person disclose the whole process of his manufacture, and, in return, require only the privilege of using it exclusively for fourteen years, and he would be instantly stigmatised, by vulgar prejudice, as a monopoliser. It might be very readily shown, were it necessary, that the advantage of protecting new inventions from piracy, is quite as great to the public as to individual inventors; and, we believe, that if the patent laws were amended, so as to afford increased and more certain protection at a less expense, the additional stimulus thus given to inventive genius would be highly beneficial to the community.

NEW INVENTIONS.

A NEW MOTIVE POWER.

We take the earliest opportunity to introduce to our readers, a description, furnished by the inventor, of a new motive power, or new means of obtaining motive power, that is, a generated power by the law of centrifugal force.

This will appear clear by attending to the following details, together with the figures, or plates; reference being had to the letters marked thereon. First, it is a well understood law, that all bodies moving with a circular motion, have a tendency to fly off from the centre of motion, which tendency is called centrifugal force. Another law of matter is, that these centrifugal forces are always in proportion to the squares of the velocity; that is, if the motion of rotation round a centre be double, the centrifugal force or tendency to fly from that centre of motion will be quadruple.—This, the annexed figure, or drawing, will clearly show:—



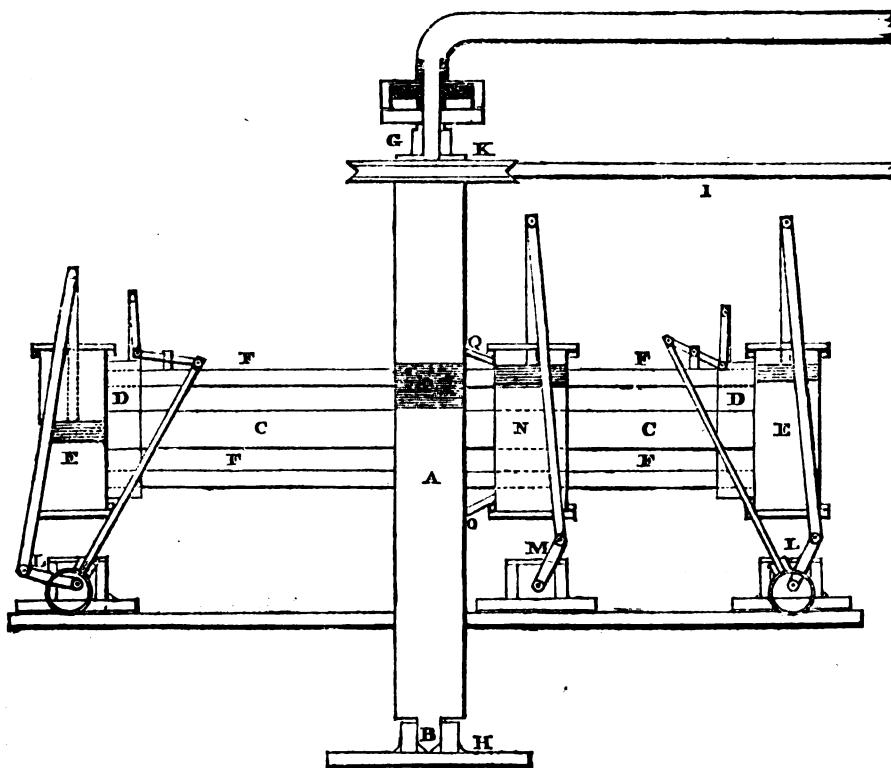
Suppose the point at A, to be the centre of motion; the direction of motion from B towards C with a certain force. Suppose a body is carried in a circle from B to D, the tangent is at E. Suppose a body is carried in a circle from B to G, the tangent is as at H.—Now the tangent at H is quadruple the tangent at E, notwithstanding the distance from B to G is only double the distance from B to D; therefore, when the velocity of a body in a circle is double, the centrifugal force, or pressure from the centre of motion, is quadruple.

In order to give to a body a double motion; or velocity, even against gravity, there only requires a double power or force; this is a well understood law of mechanics, and requires no farther illustration here.

We shall now show how the above-stated, laws

produce a sublime and unlimited motive power, capable of propelling the largest ships, and suitable for all purposes where steam and other powers are now used.

The annexed figure, or drawing, will illustrate this, and show one method of constructing what is called the generating engine:—



A is a hollow shaft, or axle, from the pivot at B, up to a solid part at P. The arms or tubes, C C, are hollow also; and connect with the boxes or chests D D, which cover the slide valves of the cylinders E E, and with the shaft or axle A. The cylinders E E, are firmly bolted to the arms F F F, which arms are made secure to the shaft, or axle A. This shaft, or axle, works in a collar or bearing at G, and on its pivot B, in the foot or step H.

It will be evident, that this shaft, or axle, A, will revolve freely on its pivot B, and in its collar G. Suppose this generating engine to be fixed in a frame, having an air-tight vessel or case around it, sufficiently large to allow the extreme arms to revolve freely,—let this air-tight vessel, or case, be charged or filled to a certain extent with any fluid body, but say, by preference, with pure sweet-oil, as the most favorable fluid to the machinery. Let this charge of oil rise sufficiently high in this vessel, or case, to cover openings or passage-ways in this hollow shaft, or axle, A, a little above the pivot B. Let this hollow shaft, or axle, A, be also filled with the fluid body oil; likewise, let the hollow arms, C C, with the chests, D D, and the cylinders, E E, be filled or charged with the fluid body oil. It is plain that on giving a circular motion to this generating engine, either by manual power, or by a working engine, geared so as to work the band I, which passes round the pulley on the axle A, at K, the fluid body with which the arms C C, are charged, will have a tendency to fly off from the centre of motion, according to the laws already stated, and will consequently produce a pressure on the pistons in the cylinders E E. These cylinders have slide valves attached, similar to those of a steam-engine, but having larger passage ways to suit the denser fluid they have to work; these slide valves may be worked by any of the well-known forms of gearing slide valves, and will allow the pressure to act on one end of the pistons, while a partial vacuum is created on the other end by the discharging of the fluid body through the eduction pipes, properly arranged to the cylinders. These pistons will

move in the cylinders in consequence of this pressure, and give motion to the cranks L L, to which cranks, the piston rods are attached in the usual way.

It will appear clear, that the revolving or circular motion of this generating engine will not prevent the moving of the pistons in the cylinders E E, nor the revolving of the cranks L L, for all revolve together in the same plane, and are in the same relative position to each other as if the engine were at rest; these cranks, L L, are connected to each other by connecting rods, or by toothed-wheels, as may be thought proper, and will carry each other over their centres. One of these cranks, L, is also connected to the crank M; this crank, M, is connected to the piston rod of the double-acting force-pump, N, which pump is bolted securely, as near the centre of motion as possible.

This pump, N, has a pipe or tube leading from its receiving valves, and passing with a secure joint into the hollow shaft, or axle, A, say at O; it has, also, a pipe or tube leading from its discharging valves, and passing with a secure joint into the hollow shaft, or axle, A, say at Q. This shaft, or axle, is hollow from the solid part at P, up through the centre of motion in the collar at G. Above the collar at G, a stuffing box is placed for the purpose of making a tight joint, in which a small part on the upper end of the shaft, or axle, A, revolves. This stuffing box has a tube, or pipe, attached, which leads to a working engine which is stationary, and is bolted to the frame of the generating engine in any convenient way. It will be easily understood, that if a circular motion be given to this generating engine, a centrifugal force, or pressure, will be produced, proceeding along the hollow arms, C C, which are charged with the fluid body oil, and will press upon the pistons in the cylinders, E E, which pistons will move and give motion to the cranks L L. These cranks are connected to each other, and one of them to the crank M; which crank M, works the piston in the force-pump N. This pump will act as a double-acting

force-pump, and will discharge the fluid body oil, which it is now supposed to be working into the hollow shaft, or axle, at Q; which oil, passing through the tube or pipe leading to the working engine, produces a pressure on the piston of that engine, always equal to the pressure or power acting on the force-pump, N, of the generating engine.

We have already shown, that the centrifugal force or pressure in the generating engine, is always in proportion to the squares of the velocity. Suppose this working engine to be thrown into motion by any means that may be thought proper, and to be so geared as to give to the generating engine a certain velocity; a certain pressure will be produced, acting upon the piston of the working engine. Suppose the pressure produced not yet sufficient to keep up this velocity in the generating engine, which is throwing off a certain portion of the oil, it is now supposed to be working at each stroke of the pistons in the cylinders E E. Gear the working engine, so as to give a double velocity to the generating engine; this will require a *double power* only, because the same quantity only of the fluid body oil is suffered to pass off, but the power or pressure acting on the piston of the working engine, will be *QUADRUPLE*.

Let the case be again stated, thus:—Suppose the power necessary to give a certain motion to the generating engine be represented by *one*; suppose the pressure produced by the centrifugal force to be represented by *one* also; double the velocity of the generating engine; the power necessary will be represented by *two*, but the centrifugal force, or pressure, will be represented by *four*: double the velocity of the generating engine, again the power necessary will be represented by *four*, but the centrifugal force, or pressure, will be represented by *SIXTEEN*.

This places the matter in a clear light, and shows that a grand and unlimited power is soon obtained, which may be called the *chief* of all powers, which, though long hid from the minds of men, is now opened up by the Giver of all wisdom and understanding for their use and comfort.

We will now show, that when this generating engine is properly constructed and charged, it will be of no farther expense for years, except the tear and wear of the engine; and the slight waste by evaporation of whatever fluid body may be used.

It will be easily understood, that when the fluid body is thrown off by the engine, and discharged through the eduction pipes properly arranged to the cylinders E E, it will fall again into the air-tight vessel, or case, in which the generating engine revolves; and the pressure of the atmosphere acting on the surface of the fluid body in the case, forces it up through the hollow shaft, or axle, supplies the engine again, is thrown off again, AND SO ON FOR EVER.

We will only add, on the present occasion, that the fluid body taken up by the force-pump of the generating engine, and forced to the working engine, is also carried back by an eduction pipe, is discharged into the air-tight vessel, or case, is taken up again,—AND SO ON WITHOUT END.

We wish it to be borne in mind, that in the generating engine shown in the preceding wood engraving, its air-tight case is supposed to be removed. This is with a view to the working part of the engine being more distinctly understood.

PAINTING ON MARBLE BY ABSORPTION OF COLORS.

This new branch of industry has just been tried in Italy, and the results are said to be most successful. The following is a summary of the experiments.

1st. The solution of *nitrate of silver* penetrates deeply into marble, and communicates to it a deep red color.

2d. The solution of *nitro-muriate of gold* penetrates into it less deeply, and tinges it with a fine purple violet.

3d. The solution of *verdigris* penetrates to the

depth of one line, and produces on the surface a light green.

4th. The solutions of *dragons' blood* and *gamboge* penetrate into it also, the first producing a fine red, the second a clear yellow. In order that these solutions take proper effect, the marble must be first highly polished by means of pumice stone, and the solutions (made in hot alcohol) applied by means of a light hair pencil. All the dyes obtained from woods, such as *Brazil wood*, *log-wood*, &c. by means of alcohol, penetrate deeply into marble.

5th. *Tincture of cochineal*, thus prepared, and to which is added a small quantity of alum, gives a beautiful scarlet color to marble, and penetrates to the depth of two lines. This marble greatly resembles the marble of Africa.

6th. *Artificial orpiment*, dissolved in liquid ammonia, produces instantly a yellow, which becomes more and more lively the longer it is exposed to the atmosphere.

7th. To all the substances employed for this purpose, must be added those which consist of *white wax*, mixed with coloring matters, and melted together.

8th. If *verdigris* be boiled in *white wax*, and applied with an instrument upon the marble, and the film when cold be taken off, the dye will have penetrated into it to the depth of five lines, leaving a design of a beautiful *emerald* color.

In order to execute this beautiful and important discovery in a proper manner, the following details of the process will be found of great value. Thus, when several colors are to be employed to produce a particular design, in order that they should be kept from co-mingling, and the primitive beauty of the whole preserved, the artist must observe these precautions :—

Dyes obtained through the medium of spirit of wine or turpentine, must be applied upon marble previously heated, particularly when employed for delicate designs. *Dragons' blood* and *gamboge*, however, may be applied upon cold marble. For this purpose, both must be dissolved in spirits of wine, and the *gamboge* solution applied first. This latter solution is in the first instance quite transparent. After a short time, however, it becomes troubled, and throws down a most beautiful yellow precipitate, from which a still more brilliant yellow is obtained.

The *tracery* being effected, it is submitted to the action of heat; a red-hot plate of iron being passed over the marble at a distance of about half an inch; in order to apply a more uniform heat, a small copper saucier filled with lighted charcoal is substituted for the plate of iron. When the marble has cooled, the solution is to be again applied to those places where the *tracery* is found too faint, and the heat again brought into action to dry the color in. The coloring in yellow being completed, the solution of *dragons' blood* is next applied, care being taken to observe the same rules as those employed in the first period of the process. The succeeding colors should be laid on while the marble is hot, but they do not require the assistance of further heat, in order to cause them to penetrate into the marble. To conclude; the design is submitted in the last instance to the application of those colors which require to be mixed with wax. These should be laid on with the utmost care and precaution, and a very moderate temperature kept up in the marble, for should the heat be increased to the smallest degree beyond the point required, the wax would melt and run into the other colors. A very good means to avoid accidents of this nature, particularly as coloring in wax cannot be effaced or painted over, is to dash cold water from time to time over the wax *tracery*.

The fewer the number of colors employed, the more beautiful does the work appear; while the marble in those parts exempt from coloring matter maintains all its first freshness and polish. This new branch of industry is likely to become greatly in vogue, as it admits of an infinite variety of applications in the arts.

NOTES BY A TRAVELLER.

LEIPZIG, APRIL.—Many years ago, a celebrated traveller, returning from Asia, observed, that nothing surprised him more on his journeys than to see only one carriage in use in the whole Persian empire: our greatest modern bard, some twenty years ago, expressed, in the same words, his surprise that only one solitary steam-boat should plough the noble rivers of Germany. Within the last few years no country in Europe has, in proportion, made such successful exertions for improving internal communications as Germany. Twenty-five years ago, very few good roads were to be found in this extensive region, the finest rivers were allowed to run useless, the inhabitants of their banks seeming hardly to be aware that they might become to them a source of wealth and comfort. Such were the consequences of the wars which for many years had raged all over the German land, and of the iron sway which Napoleon succeeded in establishing over all the nations of Europe, with the sole exception of the happy British Isles, for which blessing they have to thank their brave sailors and—the Channel!

Twenty-five years of peace have worked a wonderful change. You travel now from the frontiers of Russia, near Memel, to Switzerland, and from Holland to the confines of Hungary, on the best roads; all the States of Germany, large or small, vie with each other in these improvements; there is but one state which forms an exception in this honorable competition, viz. Hanover! Yes, Hanover, which, under the dominion of British sovereigns, remains stationary among the progress of its neighbors, a sad disgrace to its rulers, and creating the most painful feelings in the heart of every Englishman, who cannot but feel grieved that the cradle of sovereigns under whose government Great Britain ascended to the proudest height of prosperity and glory ever attained by any nation, should have to consider it now as its greatest bane, to be governed by a member of our royal race—separated only by one single life from the crown of the British empire!

Besides the generally good roads, steam-boats and railway lines are, of late, facilitating interior communication in most parts of Germany. Every-body in England knows the steam-boat communications on the Rhine, which for several years past have poured out a mighty stream of English travellers along the western parts of Germany and Switzerland. In the course of this summer (1840) the banks of the Elbe, Saxony, Bohemia, and the whole central part of Germany will be as easily admissible to the tourist, as the banks of the Rhine have hitherto been. Perhaps a few words on this subject may prove acceptable to persons intending to take a trip, on a journey to countries comparatively not so generally known. From London or Hull to Hamburg, steam boats are regularly running several times every week. Hamburg is situated about eighty miles inland, on the navigable Elbe. From Hamburg to Magdeburg the journey is performed on board steam-boats offering the best accommodations. The distance, by the river, is about 250 English miles. From Magdeburg to Leipzig a railway is constructing; it will be opened, in its whole length, in the early part of this summer: the journey—about 74 miles—will then be performed in three or four hours. From Leipzig to Dresden a railway has been in operation for more than a year; the distance—71½ miles—is performed in about 3½ hours. From Dresden another line of steam-boats run, about 50 miles, as far as Tetschen in Bohemia, where you find yourself at a few hours' journey from Prague and Teplitz, as well as in the vicinity of Carlsbad, Frezensbad, and the other celebrated and fashionable Bohemian watering-places, which may all now be reached without any fatigue, or any great expense, five days after embarking from England. From Prague to Brün the distance is about 60 miles, where the traveller will find excellent public coaches, or can take for private use, at any time,

and at moderate prices, stage-coaches kept always in readiness by all the post administrations throughout the Austrian empire, for the accommodation of families travelling without their own carriages. From Brün to Vienna, the journey—about 85 miles—is performed in four or five hours, by a railway which has been in operation for upwards of a year. From Vienna, the steam-boats on the Danube run through Hungary to the Turkish frontiers, and the Black Sea, in communication with those plying to Constantinople, Odessa, Trebisond, &c.

It is evident, from what I have here said, that in two months, when the whole Magdeburg Leipzig railway is opened, a person may travel from England to Vienna, or to Constantinople, by steam, with the exception of a distance of about 80 miles, comprising the two sections of road from Tetschen to Prague, and from Prague to Brün, where neither railway nor steam-boat conveyance is as yet established.—*Athenaeum*.

FINE ARTS—PARIS.

THE EXHIBITION OF THE LOUVRE.

(Continued from No. 36.)

Battle subjects always form the majority of pictures in this exhibition. The French public like to contemplate these glorious pages of their national history. There are two *Battles of Toulouse*, where of course the English are thoroughly well drubbed. All this is very natural, the subject is good, but what French painters would dare to depict a national defect or a drawn game! The battle in which there is the most truth in design and coloring, is that of *Hondschoote* by Bellangé; no one better than this painter understands the bearing of the soldiery of the republic, and the empire. Perhaps the best battle piece, and certainly it is the only one in which there is any indication of thought, is the *Battle of Fontenoy*; the manner in which the painter has introduced his lights, throws a fine poetry into the subject. But in point of fact, we are more than ever disgusted with battle pieces, and if we look with real pleasure on any, it is only on the few which represent subjects from ancient history. The Victory of Constantine over Maxentius, by Raphael, if we mistake not, is certainly a *chef d'œuvre*, and Lebrun's pictures are unquestionably fine; Rubens was fond of the strife of warriors, and he found in these subjects wherewith to exercise his towering genius and his bold originality. But modern battles, which rarely offer any of those fierce struggles of hand to hand, where men and horses join in one grand chaos, are in our eyes absolutely insupportable. What on earth can be less interesting than files of red-coated or red-tasseled soldiers; what more detestable than the eternal grey of the smoke of gunpowder? There is nothing in modern battle subjects to charm the beholder, for there is nothing in them that can fire the painter's soul. Inspiration, judgment, taste, and ideality all bow before the French nation's idol,—military glory.

Sea pieces are also in great number. Among marine painters stands pre-eminent—M. Gudin, whose works for some years past have been so numerous that there are few who have not seen and admired them, whether in France or elsewhere. There is a boldness and expansion in his seas that at once rivet the attention; while the prismatic coloring of his waves and breakers, of admirable transparency, and the flakes of light which mingle with the spray where it dashes over rocks or vessels, lend a truth to the general design, and a charm to the tone of the picture, which astonish while they enchant. Gudin occasionally, however, in his daring attempts to produce effect, falls into an unmeaningness, rarely seen even in the works of inferior painters; as an example of this, we have only to cite his *View of Constantinople*, a picture in the present exhibition: in his anxiety to produce a striking effect of light throughout the whole picture, he has finished

by throwing into it an unnatural paleness and an inconceivable confusion!

Effect is not every thing in the Fine Arts, and, unfortunately for those painters who sacrifice to it the merits of detail, it is found that the public sooner become tired of it than of any other quality. The *View of Marseilles*, by M. Eugène Isabey, is a painting full of originality. The view is taken from the summit of a rock, and gives a noble picture of the active port and superb edifices of the queen of the Mediterranean; a steamer just entering, whose deck is crowded with passengers, greatly contributes to the animation of the scene. It is a pity that M. Isabey should not have thrown a few fleecy clouds into his sky: the eye becomes soon fatigued by the glare of a sultry southern atmosphere, and many of the very best pictures are sometimes spoiled by the defect of a too close approximation to truth. Algerine skies have become so much in vogue of late, in consequence of the vast number of representations of French battles, retreats and skirmishes in Africa, that there is every reason to fear a downright epidemic among the disciples of the schools of Isabey and Lepoitevin. Seven-tenths of the tableaux de genre of this year's exhibition, sicken you by the uniformly-dazzling glare of their Algerine skies. A lady of quality bedizened with jewellery, seated before a beer jug in a filthy cabaret; or Flemish boors playing at skittles in elegant London and Parisian drawing rooms of persons of *haut ton*, would not be more inappropriate or absurd, than are these same skies in the majority of pictures in which they are introduced.

Sea fights are likewise considerably on the increase; the late expedition to St. John of Ulloa having furnished subjects for several pictures, by no means badly executed. One painting in the gallery particularly attracted our attention; the artist is a M. Morel Fattio, the same, if we mistake not, who exhibited a very excellent picture at the late Brussels Exposition. It represents the *Vengeur*, line-of-battle ship, in active engagement; the subject is taken from one of the most brilliant episodes in the history of the republic, and very ably treated. M. Fattio is rising fast into celebrity. A little more attention, however, to reflected light in his waves, particularly where they break up against a vessel's sides, and a more judicious introduction of his shadows, would render his future productions as harmonious and effective as the most rigid critic could desire.

Among historical pictures, by far the best are the *Justice de Trajan*, by Delacroix; the *Battle of Woerringen*, by De Keyser, a painting exhibited last year in Brussels; the *Dix-huit Brumaire*, by Bouchot; and the *Ouverture des États Généraux*, by Conder. The first attracts attention, not only on account of its vast dimensions, and the conspicuous position it occupies in the salon, but also from its animation and vigor of detail. The impression left on the minds of the spectators does not arise from its first aspect, for the defects are too glaring in the principal features of the picture not to occasion great regret. Trajan mounted on a charger occupies the middle of the foreground. The outline of the horse, which forms the point of sight, is unfortunately incorrect. The fore-legs are raised several feet above the level of the ground, while the hocks are bent forward so exaggeratedly that you are at once struck with the impossibility of a horse, in such an attitude, maintaining his balance even for an instant. At a short distance from this curious animal stands another quadruped of the same species, more out of drawing than the first, and grinning like a camel at the sight of water. But to return to the foreground; the next striking feature is the expression of the man supporting the woman who asks justice of the emperor; it appeared to possess admirers, but we candidly confess we saw nothing in it that was not very common-place. On the other side of the principal figure, but still along the foreground, is a youth, rather ill-built; whose arm is held back by a second female; the movement is energetic, natural, and admirably conceived, but the translation on the canvas has not been happily effected. These are the first features of the

picture which attract the attention of the spectator, and consequently the very ones in which there should be the fewest errors of detail. But by the side of these defects, there are qualities which throw them speedily into the shade, while the *tout ensemble* is imposing and full of grandeur. The head of the principal personage, Trajan, is amazingly fine, and the expression faithfully conveys the thoughts which at such a moment must have occupied the emperor. A mother demands of him to avenge her murdered son, whose corpse lies stretched before him; he hesitates; but shortly vanquished by her tears, promises to afford her justice.

The head is not that of a Roman model, perhaps even the resemblance is imperfect, but it is powerful and majestic in its character; it thinks and speaks. The profile of the widow is likewise finely outlined, and the movement of the right arm stretched out towards her son, is admirably in keeping. These are a few of the beauties of the picture, but there are many others which compensate largely for the defects we began by pointing out. As a colorist, M. Delacroix exhibits in this picture talents of the highest order. The figures grouped among the columns in the background, are in a beautiful and well studied light; the emperor's left leg is a masterpiece of execution; a white scarf which falls over the arm of the widow, casts a shadow of the most marvellous effect; while two heads of Roman citizens, close by the emperor, teem with intelligence, and the intense interest with which they are animated by the scene before them. In a word, M. Delacroix has defects which attention may soon remedy, and qualities which place him in the highest rank of historical painters and fine colorists. It is not necessary to recur again to the *Battle of Woerringen*, as we gave a critique on this in one of our earlier numbers, during its exhibition in the Brussels Gallery.

Whatever may be the importance of an historical event of modern times, nothing in the world is more ungrateful than the representation of it upon canvas. The exigencies of art must yield to the truth of recent recollections, and the painter's inspiration must evaporate before the tyranny of costumes, localities, the necessity of making portraits, and many other details. The *Dix-huit Brumaire* furnishes us an example of this axiom; although it must be confessed that M. Bouchot has done all that was possible in a painter to soften the asperities of the scene without compromising the truth of its general character. The tribune and the bureau of the president are so managed as to throw a fine light upon the figure of Napoleon and the groups which surround him, and bring them out into admirable relief. The only inconvenience that attaches itself to this judicious arrangement, is the necessity of leaving Lucien, who took a most important part in the events of the day, among the dark figures of the background. There is much energy of expression in the heads of many of the members of the regiments, much truth in their various attitudes; but the scarlet mantles are the rock upon which the painter has split; the resplendence fatigues the eye, and throws a livid glare over the rest of the picture.

In the *Ouverture des États Généraux*, M. Conder has had to contend with difficulties of the same nature, with the violet-colored velvets, and the monotony of powdered heads. For this very reason he should have been less prodigal of his light, and the picture might have looked more imposing, and the countenances of the members less blasphemous, than we are compelled to upbraid him for. The *Tiers-Etat*, which occupies the right of the foreground, has, however, many redeeming qualities—the heads are fine, and the expressions ingeniously and carefully studied.

With regard to the painting of animals, the French are still far behind the English and the Flemings. We need only see the beautiful pictures of E. Landseer, and of Verboeckhoven, and the miserable productions of the best French animal-painter M. Brasseus, to feel the truth of this assertion.

Portraits are as usual in abundance, the best is a full-length figure of Mdlle. Rachel. Why, simply

because she is a tragedian, should the artist have represented her in a long black dress, and with a fierce repulsive face, as if exclaiming—Traitor! Heaven knows that off the stage she is one of the mildest and most graceful looking young creatures in the world.

The sculpture gallery is too poor this year to merit any comment.

SCIENTIFIC MEMORANDA, AND NOTES ON ART.

On a greasy substance produced by insects, known in China as tree wax. By M. Stanislas Julien.—This substance, of which a sample was presented to the Academy of Sciences in Paris, is produced by little insects called in Chinese, *La-tchong*, or wax insects. They live on two kinds of trees. The one, which is of a bushy nature, grows in dry, arid ground, and is called *Kan-la-chu* (dry wax tree), it is easily propagated, growing against walls to the height of ten feet, bearing both cold and heat; and it prospers in the most unlikely soil. The other is a large beautiful tree, growing only in wet ground, and is called *Chou-la-chu* (winter wax tree).

The insects are not be found on the tree, they must be applied to it; which operation is easily performed, and the tree once furnished with them, always preserves them.

These particulars are taken from the chemical description by the Abbé Grovier (in quarto, page 326).

Mr. Stanislas Julien, in whose name those samples were presented to the Academy, observes that if naturalists should succeed in naturalising these insects and the two kinds of trees in France, he would willingly translate from those books he has access to, all the particulars concerning the insects, the trees, and the purification of the wax.—*Comptes Rendus*, No. 13.

A Bavarian mechanician, named Unterholzer, who has invented an apparatus for flying, has proposed to the minister of the interior to make a public exhibition of his system in the Champs Elysées, on the King's fete of the 1st May. He pretends that he can, with his apparatus, raise himself to any height he pleases, take any direction in the air, and lower himself with more or less rapidity at will.—*Calignant*.

Sir John Herschel, the celebrated astronomer, has left Slough, where he had resided for many years, for Hawkhurst, in Kent. His astronomical apparatus, the most perfect and extensive of any in the possession of a private individual, and which has been inspected by the most celebrated astronomers who have visited this country from all parts of the world, has just been removed from Slough to his new residence.

An improvement in clock-work, at present excites great interest in the scientific circles in Paris. M. Neuberger has discovered a method of applying to pendulums of all dimensions a movement which requires to be wound up only once in three months, without in any degree affecting the regular working of the mechanism.—*Polytechnic Journal*.

LITERARY MEMORANDA.

All the learned who take interest in the progress of archeological researches—all who are capable of honoring talent, when joined to a noble character, will learn with pleasure that the celebrated Lelewel is on the point of publishing a new work on Numismatics. After having thrown the light of his ingenuities and learned investigations over the monetary system of the middle ages—so painful and undertaking, that few other men would have dared to attempt it—M. Lelewel has thrown himself among a host of still more formidable difficulties. He has

carried the torch of science into the black shades of Gallic History, and by the aid of his Numismatic lore, has proved, destroyed, or confirmed the assertions of historians, who have only had to guide them written monuments. He has re-written the history of the Gauls, in writing the history of their coins. His work must be looked upon as an appendix, or rather the complement of that of M. Amadée Thierry; the one is the recital, the other the proof.

Before the researches of Lelewe, the Gallic monies so numerous and so varied, were in the most abject state of confusion. They were neglected by the learned and encumbered collections of coins, among which they were thrown without any classification. Lelewe was destined to be the Columbus of this old world. The Belgians have all along shown great interest in the labors of this savant, and a number of the most distinguished archeologists among them, threw open to him at once their cabinets, many of which are extremely precious; we understand he found those of Messrs. Delafontaine, Serrure, Guiot, Chalon, and Maynaerts the richest and most valuable. The greatest number of Gallic pieces to be found in these collections, were dug up in various parts of Belgium, and they also tend to throw a new light upon many of the obscurities of ancient Belgian History. Many scientific foreigners of various nations have also contributed their assistance to Lelewe, so that with the aid of all these materials, he has been able to establish the march of the monetary system of the Gauls through three distinct centuries of its existence, and describe their peculiar phases. All his observations were tested with great care, by historical events written or handed down by tradition, so that the work cannot fail to excite in the highest degree the interest of the Archeologist, and the curiosity of the learned generally.

The work is publishing by subscription at Voglet's, Rue de l'Empereur, Brussels.

We recommend to amateurs of German literature, and especially to the youth in England, who are commencing the study of the language of Schiller, Goethe, and Jean-Paul, a very useful work which has just appeared in Switzerland. It is a manual of poetic literature, from the time of the revival of learning to the present day, (*Handbuch der poetischen national literatur der Deutschen*), published by Doctor Henry Kurz, professor at Aarau. It is a collection of the best subjects chosen from all the German poets, in chronological order. The first part, which is no less remarkable for its high interest, than for the beautiful manner in which it is got up, embraces the period from Haller down to Goethe; the second part will comprise that of the time of Schiller and the present day.

A second edition of the excellent "Traité d'Hydraulique à l'usage des Ingénieurs," by M. d'Aubisson de Voisins, has just made its appearance a the library of Pitois-Levrault of Paris. This edition is considerably augmented, and contains besides, a great number of diagrams, indispensable to a full comprehension of the work. We recommend this able production to the serious attention of those whom that branch of science interests, and who are conversant with the French tongue. It contains in itself a mine of practical information.

Pig Iron.—The quantity of pig iron made in Staffordshire last year is calculated at rather more than 338,000 tons, and the number of puddling furnaces 581, each consuming 12½ tons of coal per week. It is further calculated that, owing to the reduction of 20 per cent. in the make, the accumulation of pig iron during the puddlers' turn-out will be worked down in the ensuing quarter. Orders in the midland counties are steady, and an advance of 5s. per ton has taken place in Scotland.—*Leeds Intelligencer.*

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING APRIL 27TH, 1840.

Monday.	Royal Geographical Society...9 P. M. British Architects.....8 P. M. Medical Society.....8 P. M.
Tuesday.	Royal Medical and Chirurgical Society.....8 P. M. Zoological Society.....8 P. M.
Wednesday.	Society of Arts.....7 P. M. Geological Society.....8 P. M.
Thursday.	Zoological Society (anniver.) 1 P. M. Royal Society.....8 P. M. London Institution (anniver.) 12
Friday	Royal Society of Literature (do) 3 P. M. Numismatic Society.....7 P. M. Royal Institution.....8 P. M. Horticultural Society (anniver.) 1 P. M. Botanical Society.....8 P. M. Mathematical Society.....8 P. M.
Saturday.	

REPORTS OF SCIENTIFIC MEETINGS.

LINNAEAN SOCIETY.

April 21st. Bishop of Norwich, President, in the chair.

Specimens of British *Algae*, collected about Ramsgate, were exhibited by Mrs. Allen. A paper was read from John Blackwall, Esq., F. L. S., on "The difference in the number of eyes with which spiders are provided, proposed as the basis of their distribution into tribes, with the characters of a new family, and three new genera of Spiders." In the present limited state of our knowledge, it appears that spiders can only be divided into three tribes, each division being taken from the number of eyes. The tribes are as follow:—

1. Octonoculina, having eight eyes.
2. Senoculina, having six eyes.
3. Binoculina, having two eyes.

A description of the new family, and three new genera, concluded the communication.

A continuation of a former paper was read from Rev. F. W. Hope, "On the Insects collected in Upper Assam, by William Griffith, Esq., F. L. S., assistant surgeon in the East India Company's Army," accompanied with drawings. In the Museum, Mr. Solly exhibited, under the microscope, the branched hairs containing a Spiral Fibre, found in the seed of *Acanthodium spicatum*, brought from Egypt, by Dr. Lush, and described in a recent communication to the Society, by Mr. Kippist.

The Bishop of Norwich stated, that his soireés would take place on the last Friday in the months of April, May, and June, at which he would be happy to see the Fellows.

URANIAN SOCIETY.

ADJOURNED MEETING.

April 21st. W. H. White, Esq., Vice-President, in the Chair.

The members met to hear Mr. Mark's reply to the paper by J. M. Cavalier, "On motion considered as an attribute of matter," read before the Society at the last meeting.

Mr. Mark assumed that motion was not an attribute of matter *per se*, but was the result of a power impressed by an immaterial agent; and although he could not show what point of contact immateriality could have with materiality, yet he could not do otherwise than conclude, that activity was a power independent of matter.

The chairman quoted Dr. Kiel, and others, upon the phenomena of motion, who, together with himself, viewed motion as a necessary consequence of matter.

Lieutenant Morrison remarked, that from meteorological research, he could no more entertain motion as independent of matter, than form, density, extent, &c., and he considered the conclusion as the most reasonable, it being entirely drawn from facts.

After further observations by the rest of the members, the sense of the meeting was taken, when it was unanimously carried, that Mr. Cavalier's paper be received, the meeting coinciding with his views, and considering motion as an attribute of matter.

MICROSCOPICAL SOCIETY.

April 22d. Professor Owen, President, in the Chair.

The following gentlemen were admitted members:—Messrs. Newman, Paxton, Stock, Henry, R. Taylor, &c.

A communication was read from Dr. Lindley, "On the occurrence of Animalcules in the Antheridia of *Polytrichum*." It was stated by Meyen, some time since, that the *Antheridia* of *Sphagnum* (Bog Moss) contained microscopic animalcules of the genus *Vibrio*. At a more recent period, Meyen communicated the same fact to the Academy of Sciences at Paris, and on that occasion Humboldt bore testimony to this very extraordinary fact. The existence of animalcules, bearing so great a resemblance to spermatic beings, is so exceedingly singular, that some excuse may be made for not placing implicit faith in the assertion until ocular evidence is produced. Dr. Lindley found bodies bearing all the appearances of *Vibrions*, which may be found in the *Antheridia* of *Polytrichum* (specimens of which were exhibited under the microscope), provided small fragments of the interior of the *Antheridia* are observed with one-eighth of an inch achromatic object glass, and in water. These *Antheridia* contain a cellular mucous substance, of great transparency, and in each of the cells lies one *Vibrio* coiled up, which turns round and round within the cell with such rapidity that it resembles a Cyst in very active motion, the dark head of the *Vibrio* forming a kind of eccentric centre, round which the rotatory motion takes place. As soon as the *Vibrio* gets into the water, its tail becomes straighter, and then the true motion of the moving body becomes apparent.

These observations were made a fortnight since, from specimens of *Polytrichum* obtained from Wimbledon Common, Surrey. The communication was accompanied with a drawing of the animalcules within the cells. A discussion ensued, in which Messrs. Bowerbank, Solly, Dalrymple, Varley, and the President took part.

A paper was likewise read by Mr. Bowerbank "On some new forms of Vascular Tissue," hitherto undetected in any recent vegetable. We regret to be compelled to defer (for want of space) the interesting details of this communication until our next number.

THE THEATRES.

"See that the players be well used."—*Hamlet*.

"Nothing extenuate, nor set down aught in malice."—*Othello*.

All attempts at gravity, and sober seriousness, are quite done away with for the present, by the Easter pieces and "gorgeous spectacles"—produced for the gratification of the holiday-folk, whose names are "Legion." Were we now to sit in judgment on the "legitimate drama," and criticise the performance of Mr. Charles MATTHEWS, as the Honble. Tom Shuffleton, &c., &c., we should only be laughed at, and get nothing for our pains but ridicule. We therefore lay aside our "Bishop's Wig" for a season, and let mirth and jollity have their full sway.

COVENT GARDEN.—The grand novelty here, is entitled *The Sleeping Beauty in the Wood*, and it adheres in its plot very closely to the original nursery tale. We are first introduced to the abode of the *Fairy Baneful*, where she sits neglected and sullen, a little cheered by daily newspapers (brought by a flying post-boy), imprinted at the fairy press. By their tiny broadsheet, she learns that the *Queen of Noland* has given birth to a daughter, and that all the fairies are invited to the christening, excepting only herself. Filled with rage against the royal couple, she orders her dragon, and drives off 9,000 miles to attend the festival. The banqueting-hall of the *Court of Noland* is truly a magnificent saloon, and the arrival of the seven friendly fairies is managed very ingeniously. The chairs placed at the table for them suddenly whirl about, and lo! there sit the seven expected guests. Then follow the seven gifts, and the malediction of the spindle on the infant Princess, the antidote of the benevolent fairy, and the grand decree against spindles issued by the *King* (BLAND), and consigned to the care of *Lord Factotum* (HARLEY). In the next act, we are introduced to the octagon tower, where the *Princess Isabelle* (Madame VESTRIS) is confined; a splendid apartment, illuminated by stained glass windows. The fair captive sings her sorrows to the air of "*Nix my Dolly*," introduced by an amusing symphony from "Di piacer," and "accompanied" by a parrot on his perch. It was so well sung on Monday, that it received a unanimous *encore*. The story is then fully worked out, and the piece concludes with the illuminated palace and gardens of the Fairy Antidota. This was a most gorgeous picture, and it was intended that it should have mounted, but it was "no go." It stuck resolutely fast, and was greeted with a volley of hisses till the curtain concealed it from view. Of the actors, we would particularise BLAND, the very King of pompous Kings, and fondest of fond fathers; BROUGHAM, a "broth of a boy," as an Irish wood-cutter; and Madame VESTRIS, whose delicious notes rendered the vulgar trash she had to deliver, more than endurable. HARLEY and VINING were well matched; the first was the *fac-simile* of a buffoon, the other a drowsy, uninteresting awkward sop. We did not envy him his feelings when he laid Madame VESTRIS prostrate on the stage. His joining in the fall, did not avail him much. It was a stupid affair altogether, but it awakened him, and he did not go to sleep till the piece was over: so far, so good. The *Beauty in the Wood* was, notwithstanding the drawbacks consequent upon a first representation, perfectly successful, and has been played every evening. Judicious curtailment will make it extensively popular.

HAYMARKET.—*Richelieu*, *Hamlet*, and the *Lady of Lyons*, we observe, are announced here as stock-pieces, and very little novelty is deemed necessary by the worthy manager, though we see he has a new farce nearly ready, by the Author of *His Last Legs*.

Now that the rumor prejudicial to the fair fame of Miss Helen FAUCIT has partially subsided, that young lady will again venture on the stage, this evening, as *Pauline Deschappelles*. We trust her reception will be cordial, and that the past, whatever it may have been, will be buried in oblivion.

ADELPHI.—Two "stupendous novelties" (see the printed bill) have made their appearance here. The first is styled the *Devil in London*; the second, the *Serpent of the Nile*. The former is the joint production of PEAKE and BUCKSTONE, to whom, however, it does very little honor, for it is wretched trash. The actors, however, who figure in it, amply atone for all faults in the composition. YATES, WRIGHT, BEVERLEY, WILKINSON, and Mrs. KEELEY, are its main support, and so admirably do they enact their parts, that the audience are held in one paroxysm of laughter. We shall not attempt to develop the incidents, but refer the curious to an ocular inspection. YATES' personation of *Hookey Walker*, is a *chef d'œuvre*. The *Serpent of the Nile* is also a very splendid spectacle, in which eighty ladies figure as warriors. We never saw warriors

before, dance as they did. It was something un-martial, but pleasing withal; though we could have wished to have seen more of their feminine attractions. Perhaps, however, the fascinations of "eighty ladies" in their proper attire, might have been too much for our nervous system, so we will e'en rest content. The house was so crowded, that our escape was near akin to a miracle. Evaporation was then instantaneous.

OLYMPIC.—The evening's entertainments commenced with *A Royal Commission from Paris*, the plot of which is "short and sweet." *Alexis Kerboult* (Mr. BAKER), a rebel chief of *La Vendée*, in France, who is recently married to *Agatha* (Miss TREBLE), is pursued by the forces of the Royalists, and compelled to take refuge in the house of *Madame Jollivet* (Miss FITZWALTER), a friend of his wife's. *Monsieur Jollivet* (Mr. F. VINING), then in Paris seeking an appointment from the Government as a reward for his services in procuring the return of a ministerial deputy, happens to return home during the *séjour* of *Kerboult*, without being apprised of the circumstances, and several amusing incidents occur from the ruse having been adopted of the Vendean chief assuming his name and character. A Royal commission soon after arrives from Paris, appointing *Jollivet* the commissioner of the district, and strictly enjoining him to secure *Kerboult*, who had been traced to that part of the country. The servant *Causette* (Miss AVRES), however, handed the paper to her pseudo-master, and thus was he informed of the danger which threatened him. Under the protection of that document, after considerable altercation with *Jollivet*, he is enabled to escape to England, and when safe on his passage, an *éclaircissement* takes place between *Monsieur* and *Madame Jollivet* and the wife of *Kerboult*, and the piece concludes, as usual, with a general declaration of amity between the contending parties. The success of the piece was chiefly attributable to the spirited acting of Fred. VINING, who blustered and stamped about in such a diverting fashion, that he took the audience completely by storm, who applauded him loudly. The piece was announced for repetition every evening until further notice. The *Ladies' Club* continues very attractive; the lovely Mrs. STIRLING in the chair as usual. *Gwynneth Vaughan* closed the night's performance, with Mrs. STIRLING as the heroine. Her impassioned scenes, and energetic displays, were painfully true to nature, and drew forth many a tear.

ASTLEY'S.—This right Royal place of summer entertainment, threw open its doors for the season, on Monday, which was the signal for the house to be filled in every part. A new Easter spectacle was prepared for the occasion, entitled *The Merchant's Steed of Syracuse*, being as the "bill" (most extraordinary document!) expresses it—"a grand hippo-dramatic spectacle in three parts, combining classic and historic splendor, intense interest, by man and horse, with magnificent scenic effects, in which the unequalled resources of this theatre will be brought into action." This expressive programme relieves us from a world of difficulty, for it would have required full two columns of our space to have explained, in our language, the points of the spectacle. Suffice it to add, that it embodies the well-known friendship of *Damon* and *Pythias*, all which is carefully and satisfactorily worked out by "horses, men, and scenery." Of the bipeds,—we are bound to speak in high terms of the hero *Damon*, ably personated by Mr. WEST, jun., whose reception was most cordial, and who played with great energy and judgment. The quadrupeds were, as they ever are here, "quite up in their parts," and they "acted" nobly. The scenery, too, deserves an equally favorable mention. It was, in every sense of the word, appropriate and classically correct. The scenes in the circle followed, and afforded an excellent opportunity for the display of Mr. DUCROW's admirable training, as exhibited in the wonderful performance of his beautiful animals. The *Duel and the Valet* concluded the evening's entertainments, which gave perfect satisfaction to a delighted audience. Suc-

cess say we, attend the spirited proprietors,—Messrs DUCROW and WEST.

STRAND.—We glided into this "Temple of Science," as it is now designated, to behold once again our old friend the "Wizard;" not however till we were fully assured that he was unconscious of our presence, for ever since our recent experiment with a blunderbus, we have been unusually cautious in encountering him, knowing, or at least suspecting with whom we have to deal. If he be not a certain nameless gentleman, a patron of the "black art," he is undoubtedly a very near relative of his; but let that pass. The holiday folk appeared spell-bound during the Wizard's feats of *diablerie*; and many were petrified with astonishment on witnessing the celebrated gun-trick. We cannot recommend a greater treat than a visit to this little theatre.

SADLER'S WELLS.—The various novelties produced at this theatre for the gratification of the holiday-folk, shows much good management; and the pieces themselves promise to become attractive. *Bianca Contarini; or the Doge's daughter*, and the *Pirate's Oath*, a new romantic drama in four parts, commenced the night's entertainments, in which the acting of Mrs. R. HONNER was admirable—a perfect gem—contrasting strangely with the other *dramatis personæ*, who—but we will spare them, although some of them murdered the Queen's English most foully. With the laughable interlude that followed—termed *Mischief Making*;—the audience seemed highly delighted, testifying their approbation by roars of laughter. Mr. HALL and Mrs. Richard BARNETT are great favorites here. To the above succeeded, revived with great splendor, the Romantic Eastern Melo-dramatic Romance entitled the *Secret Mine; or the Treasure of the Mountain*. The scenery, dresses, and decorations, are in good taste, and much care is evinced in the getting up.

SURREY.—David's bill of fare was, as usual, "immense," there being no fewer than three new pieces, and all successful! The first, the play bill announces as *The Life of a Woman; or the Curate's Daughter*, adapted for the representation of Hogarth's celebrated pictures of *Marriage à la Mode*, or the *Harlot's Progress*, the plot of which it is unnecessary to detail, as the original paintings, or the engravings from them, are so well-known. The various characters were, for the most part, well and correctly sustained, and the *tableaux vivant*, representing six pictures of Hogarth's on the same subject, were graphic and forcible. The *Wet Nurse*, a farce, translated from the French, followed, and was greeted with roars of laughter, which continued till the fall of the curtain. The last piece, a melo-dramatic romance in three acts, entitled the *Venetian; or the Council of Ten*, is founded upon Cooper's story of "The Bravo." The principal parts were well sustained by Mr. E. F. SAVILLE and Mrs. H. VINING. The scenery was new and appropriate, and reflects much credit on the artists. The house was so full that scarcely a gnat could have found room to winkle. We positively could find no room to SQUEEZE.

VICTORIA.—The evening performances at this house, commenced with a new grand Eastern spectacle and tale of enchantment, entitled *Sadak and Kalasrade; or the Waters of Oblivion*, adapted from the thousand-and-one tales of the Arabian Nights, by Mr. E. STIRLING. The story is so well known, that to give the plot would in us be a work of supererogation; suffice it to say, the scenery, dresses, and decorations were tasteful and appropriate, and the illusion throughout was all but perfect.

The talented Chiarini family were introduced here for the first time; and their astonishing performances on the *Corde Volante* gave the utmost satisfaction to the audience, who testified their approbation by applauses, long and loud. Besides these, there was an amusing pantomimic sketch, called *Harlequin's Easter Offerings*, and the *Gipsy Queen*, a piece that has already been successfully produced. The house, we regretted to see, was but indifferently attended.

MR. DOWTON.—This venerable actor is about to take a farewell benefit. He is now about 74 years of age, has been half a century before the public, and is, we believe, the actor now longest on the stage. However, he has not been able to realise sufficient to enable him to retire, and the "farewell benefit" is for the purpose of giving him some provision in his declining years. His case, as one most deserving of attention, has drawn forth the consideration of the most distinguished persons. Among those who have come forward as his patrons are the Queen Dowager, the Duke of Cambridge, the Dukes of Bedford, Beaufort, Devonshire, and Northumberland; the Marquis of Normanby; the Earls of Chesterfield and Uxbridge; Lords Holland, Saxe and Seale, Maryborough, Segrave, John Russell, and Dudley Stuart. A committee of noblemen and gentlemen, headed by the Duke of Beaufort, the Earl of Chesterfield, and Lord Dudley Stuart, is forming for the purpose of organising the benefit, and ascertaining the probability of success.

THE GERMAN OPERAS.—*To the Editor.*—Sir,—I cannot help troubling you with the present, in consequence of the address to an English public upon the advertisement of the proprietors of the ensuing German operas.

The advertisement to which I immediately refer, states that the orchestra, "entirely of Germans, will consist of 30 first-rate musicians, directed by Herr Ganz." Does this gentleman intend to say to the many very eminent professors of England, Italy, Paris, and the whole of Europe, that none but Germans are capable of doing justice to the compositions of the most eminent German composers, and that the language of music is only to be conveyed by the native of the country that he may be born in? It may be true that the most eminent of a country, as a theatrical performer of any stage, may be capable of giving the true enunciation of the language of a country; but I humbly presume in music its effects may be expressed by a clever artist of the profession of any country.

When foreigners invite the English nation to encourage their efforts to please or astonish, on forming a company, it seems to me too much of the exclusive nature to place it as a matter of introduction to favor, to take merit entirely to themselves.

Music has no nation, but melody has; many of the highest gifted men, now resident in England, of all nations, I feel, are insulted by a placard, that to the Germans only are they to be indebted for the performance of German operas. Can the Germans surpass a combination of various countries? If not, their notice is an insult. Really this, in my opinion, is too bad of the Germans claiming English patronage.

How many now out of employ would be willing to render their talent to the German orchestra, and whose aid and assistance thereto would render it effective without this exclusive neglect of British talent in particular! Yours, &c.

A FORMER MEMBER OF THE ITALIAN OPERA.

EDINBURGH.—The Misses SMITH, nieces of the Countess of Essex, took their "benefit" at the Theatre Royal, on Saturday last. The play selected was the *Merry Wives of Windsor*, in which Mr. Pritchard, of the Theatre Royal, Covent Garden, enacted the character of *Mr. Ford*. It was a masterly performance. *Mrs. Ford*, and *Mrs. Page*, were respectively and ably represented by Miss SMITH and Miss Julia SMITH. The house was well-attended.

ABERDEEN THEATRE.—On Monday evening, the theatrical season here was brought to a close. Miss Ryder took her benefit, and the house was respectably filled. We must now take leave of Mr. Ryder for some months, and need only say that, if he be as successful at other places as he has been, this season, at Aberdeen, he will have no cause to complain. Assuredly much credit should be given to him for having, in a great degree, revived a taste for the drama in this city. He has effected this by good management, and without the aid of "stars."

We have had no lack of novelty, and there has been a very respectable and efficient company.—*Aberdeen Herald.*

Doebler, with Madame Stockhausen, Miss Billestein, and Mr. Machin, will give concerts next week in Edinburgh and Glasgow; after which it is the intention of Doebler to pay Ireland a visit, accompanied by Miss Birch and Zuchelli.

Mr. and Mrs. Edward Seguin are playing very successfully at Charleston, in South Carolina. The operas performed there already, have been the *Barbiere di Siviglia*, *La Gazza Ladra*, and *Der Freyschütz*.

Mademoiselle Nau, *prima donna* of the Académie Royale de Musique, at Paris, who acquired such great celebrity in Auber's *Lac des Fées*, has arrived in London, on a leave of absence for six months.

Mademoiselle Rachel, the Melpomene of the French stage, has just concluded a new engagement in Paris, by which she is to receive about £2,500 for some 60 performances. In the same capital, Donizetti's new opera of *Les Martyrs* promises to become so popular that the musical copyright has been purchased for £1,200.

VIENNA.—April 10.—The Italian Opera season has commenced. Hitherto the *Prizioni di Edinburgo* and *Lucia di Lammermoor* have alone been performed, and both those works, though of no transcendent merit, have enabled the cantatrice, Gabussi, and the splendid tenor, Moriani, to earn the applause of our public. Signora Frezzolini has given less satisfaction, though she enjoys in Italy great reputation. In our higher circles, there are still some entertainments, notwithstanding Lent. Prince Liechtenstein has had two parties, in which some ladies and gentlemen have executed some dramatic pieces with much cleverness and humor. At Prince Wasa's, there has been a repetition of *Tableaux*.

Mr. J. B. Cramer intends to pay London a visit in the course of next month.

Liszt, the eminent pianist, will arrive in London on the 4th or 5th of May.

Ivanoff is engaged as *prima tenore* at the Opera, Florence.

Benedict's opera, *The Gipsy's Warning*, is to be performed during the fair at Frankfort; German words having been adapted to the music.

PARIS.—The long expected, and much-talked-of opera, *The Martyrs*, has at length made its appearance; not, however, to add a fresh laurel to the wreath of Donizetti. It is certainly not his best, or even second best production. It is true, that the *finale* of the third act is very fine, and drew down showers of applause; but, taken as a whole, the opera is not first-rate, wanting that religious character of music which the subject demands. *Polyeucte* appears devoid of that noble enthusiasm, which should characterise a Martyr. He rather seems in the opera to be painted as a mere leader of revolts than the blessed candidate for an immortal crown. Denis, and Sorda, were absolute failures. As an opera, *Les Martyrs* have done little credit to Donizetti; as a spectacle, it is unequalled, even the grand procession in the Jewess is thrown into the shade, by the splendor of the triumphal march in the second act. The scenes representing the interior of the temple of Jupiter, and the Amphitheatre in which the Christians are to be devoured by wild beasts, are, perhaps, the finest specimens of scenic art ever produced. The name of the writer has not yet been announced.

BRUSSELS.—The Opera house, which is to close for the season in a few days, has been well attended during the week; the new Ballet of *Kenilworth* having nightly attracted large audiences. Mlle. H. Eissler is unanimously and justly applauded in this really magnificent spectacle, while M. Albert, the composer of the ballet, is the perfection of pantomimic acting, in his embodiment of *Varney*. This beautiful piece brought out so unfortunately

late in the season, will, it is to be hoped, be revived whenever the theatre is re-opened.

On the 25th, an Italian company, under Signor Nigri, commence a series of twelve performances; they close on the 20th of May. After that, what is to become of the theatres of Brussels? No one knows. Many fear, they will not re-open this summer. At all events no person has yet offered himself as a future director.

ST. PETERSBURG.—The German operatic company, here having been refused permission to perform Meyerbeer's opera of the "Huguenots," even according to the Austrian version, that delightful opera has been sung as a concert without scenery or dresses, and even in this anti-dramatic guise, received the most unbounded applause. The celebrated tenor, Breiting, did ample justice to the part of Raoul.

Mdlle. Taglioni, during her residence in this capital, has been presented with a splendid sledge drawn by four horses, driven by an ample-bearded Russian coachman, which daily takes her to and from the rehearsals. The figure-head (as it would be nautically termed) of this elegant carriage, represents Taglioni in the character of *La Gitana*; the body of the vehicle is lined with costly furs, and upwards of 2,000 little silver balls are attached to the harness, whose mellow tinkling never fails to draw admiring crowds to gaze on the graceful danseuse, as she passes through the streets of St. Petersburg.

MODE OF LIVING IN CUBA.—The social habits of the people in this part of the island, Santiago, bear a stronger resemblance to those of Port au Prince, and the other great towns of St. Domingo, than to the system adopted in the capital. The principal meal of the day, by some called a dinner, and by others a breakfast, is usually served at 12 o'clock. At the Havanna, the peninsular custom prevails of dining at three in the afternoon, and afterwards indulging in the *siesta*. The old Spaniards, in fact, divide their four-and-twenty hours into two little days, which, as far as eating or sleeping is concerned, are made to resemble each other as nearly as possible. As soon as they awake in the morning, they must have their crust of bread, and their tiny cup of chocolate, which they find sufficient to sustain them till the hour of dinner, of which they make a hearty meal. Here the first of the two little days may be said to end; and, after the *siesta*, the crust of bread and the chocolate are repeated, leaving another interval of abstinence from five o'clock till midnight, when they eat a hearty supper, resembling, in all respects, their three o'clock dinner, and go once more to bed, setting at open defiance the old rhyming Latin maxim:

"Ex magna cena stomacho fit maxima poena,
Ut sit nocte levis, sit tibi cena brevis."

After dinner comes the *paseo* and the interchange of visits, those of ceremony being reserved for the saints' days, of the first order, the *Fiestas de los Cruces*. When the ordinary resources of music, dancing, and conversation, are found insufficient to fill up the evening, the people of the Havanna have the same public *funcions* to go to as in the great cities of the Peninsula, the theatre, the opera, or the Corrida de Toros.—*Turnbull's Travels in the West.*

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SATURDAY, MAY 2, 1840.

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THE MEANS OF ECONOMISING FUEL IN MANUFACTORIES.

(From the *Moniteur Industriel*.)

THE EMPLOYMENT OF THE GAS DISENGAGED FROM THE MOUTHS OF FURNACES, AND FROM COKE OVENS.

We hope the time will come when, by means of the increase of canals and railways, the expense of the carriage of coal will be so much diminished as to admit of its use in a great number of manufactures, as well as for domestic purposes. Then the consumption of wood will diminish in a great degree, as well as its price, and we shall cease to hear the terrible prediction that France will be ruined for want of wood. Then, also, our manufactures and our forges will no longer require that protection which is so unjustly condemned, for they will no longer have cause to dread foreign competition. In the expectation of this happy period, which is, perhaps, only a few years' distant, if the Government and the Chambers would establish a system of public works, supported by the credit of the state, we must not relax our endeavors to discover and try all possible means of economising fuel.

M. Vivenot Lamy, master of very valuable forges at Ardennes, an active and intelligent man, has addressed an article to the journal *L'Ancre*, on the use of the gases that are disengaged from the mouth of blast furnaces, in which he maintains and demonstrates, that there is a positive advantage in employing the heat lost in the mouths of blast furnaces; and that in France and in Germany the plan has been successful, not by the re-introduction of the gas into the furnace, but by using it in other operations, as in puddling.

"M. Robin, a practical engineer at Colmar," says M. Vivenot, "and M. Baudelot, manager of the furnace of Harancourt (Ardennes), are both engaged in this important subject, and both have been successful. The method of M. Baudelot, as simple as it is ingenious, of using the gas wasted in a number of operations in which heat is necessary, appeared to me to be attended with such satisfactory results, that I have not hesitated to make arrangements with him for using the patent, of which he is the proprietor.

"What is especially requisite for the operation of puddling, is a high temperature, at least sufficient for the fusion of the metal. To obtain this temperature, fuel is necessary, and it is immaterial whether it be coal, wood, or charcoal, provided it can in a given time give out the requisite quantity

of heat. Now, the gases of the furnace-mouths form an excellent combustible; they may be substituted for coals upon the grate, if not entirely, at least for the greater portion, and will not impede the indispensable action of the oxygen for the decarbonization of the melted metal.

"It is now more than a year since your journal inserted an article against the possibility of conducting, by means of a conducting chimney, the gases from the top of the furnace to the bottom of the manufacture, though for a long time previous I had successfully used similar chimneys. Now you commend that principle; let us hope it will be the same ere long respecting the application of gases for puddling. It is not, however, by means of a conducting chimney that this is to be accomplished. I know by experience the inconveniences of those chimneys; the rain, wind, frost, the least crevice, or an obstruction, is enough to change the regularity of the draught—it is by using the machine for drawing in and expelling the gas, contrived by M. Baudelot, and which enables the operator to take from the furnace mouth such a quantity of gas as is considered necessary for the different purposes to which it is to be applied."

We have now to mention another application of heat, not less advantageous than the foregoing, the success of which has been formally proved at Bordeaux, in the presence of the civil and military authorities, of the Presidents of the Tribunal of Commerce and of the Chamber of Commerce, and of a great number of citizens.

M. Claviere, a distinguished engineer, and patentee of a new system of locomotives, has discovered the means of putting in motion a machine of thirty-horse power with the gas produced from four coke ovens. It is at the mill of Paludate, at Bordeaux, that this admirable invention has been applied. A correspondent at Bordeaux says, "the manufactory of Paludate which has been stopped for a long time past, on account of the expense of fuel, has been again put in action; the steam costs nothing, as the coke is sold for the same price that the coals originally cost. The invention of M. Claviere has resolved an important problem in manufactures—in every factory where coke is employed, the moving power for the machinery will be obtained without expense." In the *Indicateur* of Bordeaux, some very interesting details are given of the establishment of Paludate, from which we make the following extracts:

"M. Claviere has built, according to his plans, four coke ovens in the old steam mill of Paludate. These ovens are in a part of the building forming a rectangle of 16 metres by 13, and contiguous to a room in which a steam-engine is placed. Each

of these ovens can hold from 35 to 40 hectolitres of coal, and above them is a cylindrical boiler.

"During the baking of the coal, the openings of two of these ovens permit the gas to escape, which burns through small orifices by being supplied with oxygen; and the quantity of gas escaping is regulated by means of doors, or registers, according to the rapidity of the distillation.

"The openings of the other ovens also produce a flame, which, passing through many orifices to the register, heats the boiler in such a manner that the heat generated by the combustion of the gas surrounds it on all sides. The boiler presents to the action of the flame a heating surface of sixty metres for a low pressure steam-engine of thirty-horse power. This extent of heating surface is necessary, because the ovens being charged at different hours cannot be at the same time in operation, and in order that they may be so managed that out of the four there may be two continually in action.

"M. Claviere's ovens produce, in the first place, as many hectolitres of coke as the number of hectolitres of coal that were put into them; and, again, the heat of the gas being used, a quantity of steam is generated in the boiler, sufficient to put in action a steam-engine of thirty-horse power. Now as coke is of nearly equal value with coal, it follows that the steam for such an engine costs nothing."

APPLICATION OF ALOETIC ACID TO DYEING.

M. Boutin has succeeded in making a valuable addition to the products of the dyer, by the application of aloetic acid. M. Bracormot of Nancy had, indeed, discovered and described that acid in 1808, but M. Boutin has been enabled to render it more pure, and his preparation of it is not liable to the frightful accidents from detonation which M. Bracormot appeared not to be able to prevent. M. Liebig, also, in treating aloes with nitric acid, had obtained other products, among them a peculiar acid which promised to be of great utility, as wool could be dyed by it a beautiful black, and cotton a rose color, which withstood the action of acids and alkalies; but M. Boutin has simplified and brought to perfection these crude discoveries; that which before existed only in theory, in hope, and in prospect, has become practically useful under his skilful hands. The former process was expensive and dangerous, and had no results; whilst the pro-

cess of M. Boutin is not attended with danger, and has already added materially to the stores of industry. The following is a description of M. Boutin's discovery.

M. Boutin, as well as M. Bracormot, began by treating resinous aloes with nitric acid; but the yellow color of the powder, which the latter obtained by this means, M. Boutin considered as one indication of its impurity, and he proceeded to remedy this serious imperfection in the following manner. He first well washed the aloetic acid in warm water, until it had acquired the beautiful red-purple color which characterises it. He then completely saturated the acid with potash, or soda, and afterwards crystallised this aloetic salt. The aloetic acid was reproduced in a pure and uncombined state by precipitating it from its alkaline base by hydro-chloric acid. After some further washings, the operation was completed.

Availing himself of the privilege which every inventor or improver of a substance exercises, M. Boutin has altered the name of the aloetic acid, as prepared by himself, to *polychromatic acid*. It is a powder of a reddish brown color, very bitter, very astringent, and soluble only in 900 times its weight of cold water; and even to that enormous quantity of water, it is requisite to add 80 parts of alcohol. It does not fulminate or detonate, even on hot coals; but many of the salts which it forms have a fulminating property.

Wool, and particularly silk, are easily dyed by the aloetic acid, which gives to both varied shades, that are more brilliant and durable than can be obtained by any other organic coloring principle, whether animal or vegetable. It must be remarked, also, that a very small quantity of the acid is requisite to dye large quantities of wool or silk, and that the merest tyro in chemistry can prepare, without great expense, as much of the acid as can be required. Thus the art of the dyer has at once attained an un hoped-for improvement. It only remains for us to give some of the results of the process; the description of which M. Boutin has entrusted to Messrs. Thénard, Robiquet, and Pelouze.

By steeping silk in a mordant, consisting of a solution of acetate of copper, at the temperature of from 70 to 80 deg. centigrade (158 to 176 deg. of Fahrenheit) by afterwards washing it in ammoniacal liquor, and passing it through a bath of aloetic acid, of the same temperature as the mordant, and concluding by brightening the coloring with diluted vinegar, brown colors (*nuances bois*) of greater or less intensity are obtained. Corinthian tints (*les nuances Corinthie*) are obtained by plunging the silk in a very diluted solution of tartaric or citric acid, at a temperature of 40 deg. (140 deg. of Fahrenheit), and afterwards passing the silk through a bath of aloetic acid, of greater or less strength, at a temperature of from 50 to 60 deg. (122 to 140 deg. Fahrenheit). The rose shade is obtained in the same manner, with this difference, that the dye-bath should be very slightly charged, and should contain a small quantity of alum.

The violet shades deserve particular attention, because it is well known how scarce the organic matters are which communicate them. M. Boutin procures these shades by adding to the bath of aloetic acid, ammoniacal liquor and acetic acid. The silk ought not to be plunged into it until the liquor in the bath has become of a violet color; and the temperature should be 50 to 60 deg. centigrade. The bath for silk should contain an excess of acid; but for wool the ammonia should predominate. Blue color is obtained, by adding to the bath of aloetic acid a double salt composed of proto-chloride of tin and cream of tartar. By this means, the color of the bath turns at first to violet. A solution of chloride of tin and tartaric acid is, however, added; and a small quantity of the ammoniacal liquor is afterwards sufficient to make the bath blue. It is then that the silk is plunged in, when it quickly takes a blue tint, which M. Boutin says is very permanent. By a slight modification of the process, we can obtain shades of aventurine, fantasia, &c. &c. Green dye

is obtained by passing the silk, which has been dyed yellow by aloetic acid, through the blue bath before mentioned.

A LIST OF PATENTS SEALED

FROM MARCH 27TH TO APRIL 23d, 1840.

(Continued from Page 211.)

ENGLAND.

HENRY KIRK, of Upper Norton-street, Portland-place, merchant, for improvements in the application of a substance or composition as a substitute for ice for skating and sliding purposes, part of which improvements may also be employed in the manufacture of ornamental slabs and mouldings.—6 months, March 28.

JOHN BETHELL, St. John's Hill, Wandsworth, gent., for improvements in treating and preparing certain oils and fatty matter.—6 months, March 28.

CLAUDE JOSEPH ED. CHAUDRON JUNOT, of Brewer-street, Golden-square, operative chemist, for certain improved processes for purifying, and also for solidifying tallow, grease, oils, and oleaginous substances.—6 months, March 30.

HENRY MARTIN, of Morton-terrace, Camden-town, for improvements in preparing surfaces of paper.—6 months, March 30.

WILLIAM NEALE CLAY, of Flinsby, Cumberland, gent., for improvements in the manufacture of iron.—6 months, March 31.

JOHN LEBRECHT STEINHANESER, of Upper Islington Terrace, gent., for improvements in spinning and doubling wool, cotton, silk, and other fibrous materials.—6 months, being a communication, March 31.

PETER BANCROFT, of Liverpool, merchant, and **JOHN MAC INNES**, of the same place, manufacturing chemist, for an improved method of renovating or restoring animal charcoal after it has been used in certain processes or manufactures to which charcoal is now generally applied, and thereby recovering the properties of such animal charcoal, and rendering it again fit for similar uses.—6 months, March 31.

CHARLES CUMMINS, of Leadenhall-street, chronometer maker, for certain improvements in barometers and sympiesometers.—6 months, April 2.

JAMES STEAD CROSLAND, of Leeds, engineer, for certain improvements applicable to locomotive and other steam-engines.—6 months, April 2.

THOMAS SMEDLEY, of Holywell, in the county of Flint, gent., for improvements in the manufacture of tubes, pipes, and cylinders.—6 months, April 4.

HARRISON BLAIR, of Kearsley, Lancaster, manufacturing chemist, and **HENRY HOUGH WATSON**, of Little Bolton, in the same county, chemist, for an improvement or improvements in the manufacture of sulphuric acid, crystallised soda, and soda ash, and the recovery of a residuum or residuums applicable to various useful purposes.—6 months, April 6.

RICHARD BEARD, of Egremont-place, New-road, gent., for improvements in printing calicoes and other fabrics.—6 months, being a communication, April 6.

EDWARD THOMAS BAINBRIDGE, of Park-place, St. James's, in the county of Middlesex, gent., for improvements in obtaining power.—6 months, April 13.

THOMAS YOUNG, of Queen-street, City, merchant, for improvements in lamps.—6 months, April 13.

JAMES CALDWELL, of Mill-place, Commercial-road, engineer, for improvements in cranes, windlasses, and capstans.—6 months, April 15.

JOHN GOLD, of Etna Glass-works, Birmingham, glass manufacturer, for improvements in the manufacture of decanters and other articles of glass.—6 months, April 15.

WILLIAM POTTS, of Birmingham, brass-founder, for certain apparatus for suspending pictures and curtains.—6 months, April 15.

LOUIS AUGUST DE ST. SYLVAIN, BARON DE LOS BALLES, of Nottingham-street, Marylebone, for certain improvements in cleansing, decorticating, purifying, and preserving corn and other grain.—6 months, being a communication, April 15.

WILLIAM GRIMMAN, of Camden-street, Islington, modeller, for a new mode of wood paving.—6 months, April 15.

JOSEPH WHITWORTH, of Manchester, engineer, for certain improvements in machinery or apparatus for cleaning and repairing roads or ways, and which machinery is also applicable to other purposes.—6 months, April 15.

THOMAS ROBINSON WILLIAMS, of Cheapside, gent., for certain improvements in obtaining power from steam and elastic vapors or fluids, and for the means employed in generating such vapors or fluids, and also for using these improvements in conjunction with distillation or evaporation, and other useful purposes.—6 months, April 15.

WILLIAM UNSWORTH, of Derby, silk-lace manufacturer, for an improved tag for laces.—6 months, April 16.

SAMUEL WILKES, of Darleston, Stafford, iron-founder, for improvements in the manufacture of vices.—6 months, April 16.

WILLIAM HENRY BAILEY WEBSTER, of Ipswich, surgeon, R. N., for improvements in preparing skins and other animal matters, for the purposes of tanning and the manufacture of gelatine.—6 months, April 16.

SAMUEL MARLOW BANKS, of Bilston, Stafford, gent., for improvements in the manufacture of iron.—6 months, April 16.

ROBERT COOPER, of Petworth, Gloucester, gent., for improvements in ploughs.—6 months, April 16.

FRANCIS MOLINEUX, of Walbrook-buildings, London, gent., for improvements in the manufacture of candles, and in the means of consuming tallow and other substances, for the purposes of light.—6 months, April 23.

ELIJAH GALLOWAY, of Manchester-street, Gray's-inn-road, engineer, for improvements in steam-engines, which are also applicable to engines for raising and forcing fluids.—6 months, April 23.

JONATHAN SPARKE, of Langley Mills, Northumberland, agent, for certain improved processes or operations for smelting lead ores.—6 months, April 23.

JOHN WHITE, of Manchester, engineer, for certain improvements in vices.—6 months, April 23.

JAMES MALCOLM RYMER, of Henrietta-street, civil engineer, for certain improvements in castors for furniture, such improved castors being applicable to other purposes.—6 months, April 23.

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING APRIL 26, 1840.

ENGLAND.

JOHN BILLINGHAM, Norfolk-street, Strand, civil engineer, an improvement or improvements in the construction of cooking apparatus, April 18.

JAMES ROWBOTTOM, Great Surrey-street, Blackfriars-road, hat manufacturer, and **ROBERT LLOYD**, 71, Strand, a certain method of preparing, forming, uniting, combining, and putting together certain materials, substances, or things, for the purpose of being made into hats, caps, bonnets, cloaks, coats, trousers, and for wearing apparel in general, and various other purposes, April 18.

WILLIAM WOOD, Summer-hill Grove, Northumberland, an apparatus for destroying the inflammable air in mines, April 22.

JOHN PETTY GILLESPIE, Grosvenor-street, Newington, Surrey, a new spring or combination of springs,

for the purpose of forming an elastic resisting medium, April 23.

SAMUEL BROWN, Eagle-lodge, Old Brompton, Middlesex, improvements on his former patent, dated December 4, 1823, for an engine or instrument for effecting a vacuum, and thus producing powers by which water may be raised and machinery put in motion, April, 25.

FRANCIS HALLIDAY, of Ham, Surrey, an apparatus or machine for preventing the inconvenience arising from smoke in chimneys, which he denominates a wind guard, April 25.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE ROLLS CHAPEL OFFICE, UP TO THE WEEK ENDING APRIL 25, 1840.

(Continued from our last.)

ENGLAND.

JAMES YATES, Effingham Works, Rotherham, York, iron-founder and earthenware manufacturer, certain improvements in the construction of furnaces, April 19.—The first improvement is for placing impinging shelves above the cupola of the furnace, in order to arrest the caloric.

2dly. There are valves or dampers just above each shelf for the escape of gases, and for the arrangement of the escape of the ore.

3dly. A balance hood in shape of a funnel, working on a centre pivot, is placed over the chimney of locomotive steam-packet engines, in order to arrest the sparks and dust from the furnace, and convey them to a channel of water.

4thly. The impinging shelves are made hollow for the purpose of admitting air, to combine with the igniting gases.

The fifth improvement is for making fire-bricks. The earth is mixed up as in the ordinary manner, and narrow slips are put into an oven, until perfectly baked; when they are taken out and broken into small pieces, about the size of a pea.

These are blended together by a mixture composed of rice-water, and being moulded into shape, and dried, they are subjected to an increased degree of heat until perfected.

JAMES SUTCLIFFE, Henry-street, Limerick, builder, certain improvements in machinery or apparatus for raising and forcing water or other fluids, and increasing the power of water upon water-wheels, and other machinery, April 24.—The first improvement consists in the construction of a rotary engine or pump. An elliptical piston is made to revolve in a cylindrical chamber, the ends of which are closed by cap plates. The periphery of the piston, running parallel with the transverse axis of the ellipse, passes round in close contact with the inner surface of the cylindrical chamber. Continuous to the cylinder is a segmental tube, leading from the rising main, and opening in the cylinder, near its upper surface. Above the cylindrical chamber is a square opening and passage to the tank. A lever valve or tongue works in this, on a hinge, and presses on the periphery of the elliptical piston, which in revolving draws the water from the main, and forces the water that was below the piston into the tank above, where it is allowed to flow out through the spout of the pump.

Second improvement, for raising water, consists in the use of a diaphragm or bag, which is placed within a barrel or cylinder, the upper part of which has a dome cap. Below the diaphragm is an air vessel or buoy. A reservoir or channel of water, having its surface higher than the dome cap, empties its water through a pipe into the diaphragm, and when full, a cock shuts off the supply. The cock of a pipe leading from the bottom of the reservoir to the bottom of the barrel or cylinder, is turned, so as to admit a body of water below the

air vessel or buoy, which is made to rise and force up the diaphragm or bag, and thereby express the volume of water therein, through the pipe or opening at the top of the dome cap.

The third improvement is an overshot water-wheel, formed with buckets or recesses, with circular flanges on each side, and moving in contact with a segmental face. The water is regulated by a tongue or valve, so as to commence its power almost at the line of centre of gravity, and the segmental face retaining the water, causes its gravitating force to act upon a greater extent of the periphery of the wheel.

GEORGE GRAYDON, Lt. Col. of the Corps of Royal Engineers, Sloane-street, Chelsea, certain improvements in instruments, for which letters patent were formerly granted to him, and which were called therein "a new compass for navigation and other purposes," part of which improvements are applicable to instruments for measuring angles at sea or on shore, by aid of reflection or refraction, or of reflection combined with refraction; and part are applicable to magnetic compasses for ascertaining true bearings from celestial observations, and for comparing the same bearing of the magnetic needle contained in such compasses, whereby to determine, and be enabled to allow for the deviation of such needle from the true meridian, whether by variation, local attraction, or other cause of error, April 24.

The specification of these improvements is exceedingly elaborate, covering 17 skins; the detail is more than sufficient, and almost produces obscurity. The principal object of this improvement on a former patent, is to keep the celestial compass, as denominated by the inventor, in a state of quiescence while at sea, in order to facilitate the observation of celestial bodies. The outermost gimbal moves on pivots attached to the box of the compass, an intermediate gimbal ring on pivots connected with the first, and the innermost gimbal ring moves on pivots connected with the second. Heavy rings are attached by curved arms to each gimbal ring, so that the innermost is lower than the intermediate. The magnetic bowl that holds the compass card or needle, has a bar leading below the whole, with a weight at its lower end. By this arrangement of gimbal rings balancing one within the other, the oscillating or vibrating motion of the celestial compass is scarcely perceptible, except in a high sea. There is a modification of this improvement, but it is essentially the same in operation.

Second improvement is for applying a glass prism, or refracting wedge, to the telescope of a celestial compass, for the purpose of observing the pole star, or other circumpolar star, for the polar distance.

Third improvement is for transmitting light transversely through a bended glass prism into the eye piece of the telescope, in order to illuminate the cross wire therein, to render them visible.

Lastly, an improvement for measuring angles that are subtended in the heavens by celestial bodies.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of June 6. Each party will receive, in addition, a private communication to the same effect.

Richard Hornsby, Spittlegate, Lincoln, agricultural machine maker, due May 25.

John Sutton, John-street, Lambeth, mechanist, due May 25.

James Craig, Newbattle paper-mills, Edinburgh, due May 25.

Arthur Collen, of Stoke by Nayland, Suffolk, plumber, due May 25.

James Matley, Manchester, due May 25.

George Rennie, Holland-street, Blackfriars, civil engineer, due May 26.

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED FROM JULY 1ST TO DECEMBER 31ST, 1832.

(Continued from page 243.)

Apparatus for injecting enemata, Dec. 17, Maw, J. H.

Apparatus for sketching, drawing, or delineating, Sept. 8, Burgess, C. E. A.

Baking bread, July 19, Hicks, R.

Bedsteads, sofas, couches, &c., Dec. 20, Selby, R.

Bobbin-net lace, Dec. 17, Langham, J.

Bobbin-net lace, Dec. 18, Alcock, T.

Bobbin-net lace, Dec. 18, Crofts, W.

Bobbin-net lace, Dec. 26, Henson, W.

Bolts,—see Roller, M. G. F.

Brewing, Sept. 29, Swan, J.

Buttons, Aug. 4, Christophers, J.

Buttons, Aug. 15, Ingram, T. W.

Candles and candlesticks, Sept. 29, Palmer, W.

Candles,—see Tallow, W. C.

Canvas and cloth,—see Preserving, K. J. H.

Cauchoch or Indian-rubber into elastic thread of different sizes, Dec. 7, Dumeste, J. F. M.

Carpet,—see Figures, W. R.

Cement for building,—see Metallic, T. N.

Cement or composition for stone, Dec. 4, Ranger, W.

Cloth for sails of ships, Nov. 8, Taylor, W. W.

Coffee urns,—see Tea, W. W. E.

Collars for horses, &c., Aug. 22, Joyce, W.

Copper preserved from oxidation caused by heat Nov. 20, Perkins, J.

Cutting out wood for carriage wheels, and shaping the wheels, Sept. 22, Applegath, A.

Drawing, &c.,—see Apparatus, B. C. E. A.

Dressing and finishing woollen cloths, Nov. 3, Oldland, G.

Dyeing hats, July 19, Hodge, W.

Enemata, injecting,—see Apparatus, M. J. H.

Figures or patterns,—see Method to produce, W. R.

Fire-engines, Dec. 4, North, W. G.

Fire-grates, Oct. 22, Converse, S.

Flutes, Nov. 27, Rose, J. M.

Furnace,—see Puddling, H. D. and G.

Gas,—see Retort, S. T.

Guns,—see Priming, F. L.

Heating houses, buildings, &c., July 19, Holmes, W. D.

Iron,—see Malleable, B. J.

Lace with edges or quilling, Dec. 26, Henson, W.

Light produced instantaneously, Nov. 20, Jones, S.

Light produced instantaneously, Aug. 10, Newton, W.

Locks for doors, &c., Dec. 20, Parsons, T.

Malleable iron, producing, Sept. 8, Barker, J.

Metallic cement for building, Sept. 8, Troughton, N.

Metal roller for making metal plates for sheathing, Oct. 22, Muntz, G. F.

Method to produce regular figures or patterns on carpet, velvet, &c., Sept. 8, Whytock, R.

Mills for grinding corn, Nov. 8, Burlingham, J.

Motive power, July 26, Hainselein, P. N.

Nail-making, Sept. 29, Joyce, J.

Paddle-wheels, Dec. 17, Hardwick, J.

Papers and prints secured and preserved, so as to be readily accessible, portfolio, Oct. 12, Durant, J. W.

Paper-making, Sept. 29, Amies, J.

Paper,—see Preserving, K. J. H.

Pens, fountain, July 26, Parker, J. J.

Pens of metal, Oct. 10, Woods, W.

Pianofortes, Sept. 8, Fischer, F. P.

Pill and other boxes from pasteboard, September 8, Bell, G.

Ploughs and the shares, July 19, Wedlake, T. & R.

Portfolio,—see Paper and prints, D. J. W.
Preserving paper, canvas, cloth, hemp, &c., Sept. 22, Kyan, J. H.
Presses, July 26, Berry, M.
Priming percussion locks of guns, &c., Nov. 2, Faucade, L.
Propelling carriages and vessels, Dec. 20, Sexton, J.
Propelling,—see Steam-engines, G. E.
Puddling-furnace, Sept. 7, Horton, D. & G.
Pumps, Oct. 10, White, J.
Rails and railways, Nov. 3, Scrivenor, H.
Rails for railroads, Sept. 29, Converse, S.
Rails for road or tram-roads, Sept. 8, Badnall, R.
Raising water and other liquids, Nov. 24, Todd, T.
Retort of earthenware for generating gas, Nov. 13, Spinney, T.
Rigging for ships, &c., Nov. 13, Heathorn, J. L.
Roads,—see Scraping, B. J.
Roller for making bolts, &c., Dec. 17, Muntz, G. F.
Rope-flat for mines, Aug. 8, Crawhall, J.
Roving cotton, &c., Sept. 29, Travis, J.
Roving,—see Spinning, W. J.
Sails,—see Cloth, T. W. W.
Scraping or cleaning roads, &c., Oct. 22, Bourne, J.
Sheathing,—see Metal-roller, M. G. F.
Shoes,—see Tips, &c., S. A. and W.
Sofas,—see Bedsteads, S. R.
Spinning cotton, &c., Sept. 8, Heys, T.
Spinning, roving, &c. flax, &c., July 26, Wordsworth, J.
Spinning wool, &c., July 5, Shankland, A. B.
Steam-carriages, &c., Aug. 15, James, W. H.
Steam-carriages, Sept. 29, Applegath, A.
Steam-engines, and propelling, Nov. 7, Galloway, E.
Steam-engines, Sept. 22, Trevithick, R.
Steam-engines,—see Vapour, H. T.
Stone, artificial,—see Cement, N. W. G.
Sugar, refining, Dec. 21, Stevens, G.
Tallow prepared and refined for candles, Sept. 27, Watt, C.
Tea or coffee urns, Aug. 4, Wright, W. E.
Tips for the heels and toes of shoes, Oct. 22, Stocker, A. and W.
Train-roads,—see Rail, B. R.
Vapor-engine, steam-engines, Nov. 29, Howard, T.
Velvet,—see Figure, W. R.
Weaving elastic fabrics, Nov. 13, Desgrand, J. V.
Wheels,—see Cutting wood for, A. A.
Windlasses, Aug. 4, Robinson, J.
Woollen cloth,—see Dressing, O. G.

BRITISH PATENTEES.

AN ALPHABETICAL LIST OF INDIVIDUALS WHO HAVE TAKEN OUT PATENTS IN ENGLAND, FROM JULY 1ST TO DECEMBER 31ST, 1832.

(Continued from page 244.)

Alcock, Thomas, Bobbin-net lace, Dec. 18.
Amies, Joseph, Paper-making, Sept. 29.
Applegath, Augustus, Cutting out wood for carriage wheels, and shaping the wheels, Sept. 22.
Applegath, Augustus, Steam-carriages, Sept. 29.
Badnall, Richard, Rails for road or tram-roads, Sept. 8.
Barker, John, Malleable iron, producing, Sept. 8.
Bell, George, Pill and other boxes from pasteboard, Sept. 8.
Berry, Miles, Presses, July 26.
Bourne, John, Scraping or cleaning roads, &c., Oct. 22.
Brown, John,—see Heys, Thomas.
Burgess, George E. A., Apparatus for sketching, drawing, or delineating, Sept. 8.
Borlitham, John, Mills for grinding corn, Nov. 8.
Cattle, Robert,—see North, William G.
Christopher, John, Buttons, Aug. 4.
Converse, Sherman, Fire-grates, Oct. 22.
Converse, Sherman, Rails for railroads, Sept. 29.
Crawhall, John, Rope-flat for mines, Aug. 8.
Cripps, William, Bobbin-net-lace, Dec. 18.
Desgrand, James V., Weaving elastic fabrics, Nov. 13.

Dumeste, Julien F. M., Caoutchouc or India-rubber into elastic thread of different sizes, Dec. 7.
Durant, James W., Paper and prints secured and preserved, so as to be readily accessible; portfolio, Oct. 12.
Faucade, Leopold, Priming percussion locks of guns, &c., Nov. 2.
Fischer, Pierre F., Pianofortes, Sept. 8.
Foster, James,—see Barker, John.
Galloway, Elijah, Steam-engines, and propelling, Nov. 7.
Gibbs, Joseph,—see Applegath, Augustus.
Gutteridge, William,—see Stevens, George.
Hainsselin, Pierre N., Motive power, July 26.
Hardwick, Joseph, Paddle-wheels, Dec. 17.
Heathorn, Joseph L., Rigging for ships, &c., Nov. 13.
Henson, William, Bobbin-net-lace, Dec. 26.
Henson, William, Lace with edges or quilling, Dec. 26.
Heye, Thomas, Spinning cotton, &c., Sept. 8.
Hicks, Robert, Baking bread, July 19.
Hodge, William, Dyeing hats, July 19.
Holmes, William D., Heating houses, buildings, &c., July 19.
Horton, Daniel and George, Puddling-furnace, Sept. 7.
Howard, Thomas, Vapor-engines, Steam-engines, Nov. 29.
Ingram, Thomas W., Buttons, Aug. 15.
James, William H., Steam-carriages, &c., Aug. 15.
Jones, George and John,—see Foster, James.
Jones, Samuel, Light produced instantaneously, Nov. 20.
Joyce, John, Nail-making, Sept. 29.
Joyce, William, Collars for horses, &c., Aug. 22.
Kyan, John H., Preserving paper, canvas, cloth, hemp, &c., Sept. 22.
Langham, John, Bobbin-net lace, Dec. 17.
Maw, John H., Apparatus for injecting enemata, Dec. 17.
Mosley, John O.—see Bell, George.
Muntz, George F., Metal roller for making metal plates for sheathing, Oct. 22.
Muntz, George F., Roller for making bolts, &c., Dec. 17.
Newton, William, Light produced instantaneously, Aug. 10.
North, William G., Fire-engines, Dec. 4.
Oldland, George, Dressing and finishing woollen cloth, Nov. 3.
Palmer, William, Candles and candlesticks, Sept. 29.
Parker, John J., Pens, fountain, July 26.
Parsons, Thomas, Locks for doors, &c., Dec. 20.
Perkins, Jacob, Copper preserved from oxidation caused by heat, Nov. 20.
Ranger, William, Cement or composition for stone, Dec. 4.
Robinson, John, Windlasses, Aug. 4.
Rose, John M., Flutes, Nov. 27.
Rudall, George,—see Rose, John M.
Scrivenor, Henry, Rails and railways, Nov. 3.
Selby, Robert, Bedsteads, sofas, couches, &c., Dec. 20.
Sexton, Joseph, Propelling carriages and vessels, Dec. 20.
Shankland, Alexander B., Spinning wool, &c., July 5.
Spinney, Thomas, Retort of earthenware for generating gas, Nov. 13.
Stocker, Alexander and William, Tips for the heels and toes of shoes, Oct. 22.
Stevens, George, Sugar refining, Dec. 21.
Swan, John, Drawing, Sept. 29.
Taylor, William W., Cloth for sails of ships, Nov. 8.
Todd, Thomas, Raising water and other liquids, Nov. 24.
Travis, John, Roving cotton, &c., Sept. 29.
Trevithick, Richard, Steam-engines, Sept. 22.
Troughton, Nicholas, Metallic cement for building, Sept. 8.
Tyzack, Benjamin C.—see Robinson, John.
Watt, Charles, Tallow prepared and refined for candles, Sept. 27.
Wedlake, Thomas and Robert, Ploughs and the shares, July 19.
White, John, Pumps, Oct. 10.

Whytock, Richard, Method to produce regular figures or patterns on carpet, velvet, &c., Sept. 8.
Woods, William, Pens of metal, Oct. 10.
Wordsworth, Joshua, Spinning, roving, &c., flax, &c., July 26.
Wright, William E., Tea or coffee urns, Aug. 4.

FOREIGN PATENTS.—FRANCE.

A LIST OF PATENTS GRANTED BY THE FRENCH GOVERNMENT FROM NOV. 29, TO DEC. 5, 1838.

(Continued from No. 38.)

No. 209. Ackermann, Joseph Marie, of Paris, rue Neuve Ménilmontant, No. 5 bis, a patent of importation for 5 years, for processes for the purpose of preventing the incrustation of steam-boilers, and of other vessels employed in manufactures, Nov. 29, 1838.

210. Bérenger, Joseph, of Lyons, rue des Fous, No. 2, a patent of invention and improvement for 5 years, for improvements in bascules of every shape, Nov. 29, 1838.

211. Boileau, Pierre Edouard, of Paris, rue Bleue, No. 11, a patent of invention for 15 years, for a new perpetual motion, Nov. 29, 1838.

212. Dunand, Maurice, of Paris, rue du Marché Saint Honoré, No. 5, a patent of invention for 5 years, for the application, by means of a stamp, and without any previous preparation, of an indelible ink on linen and paper, Nov. 29, 1838.

213. Enfer, Edmé, of Paris, rue Neuve Sainte Catherine, No. 22, au Marais, a patent of invention and improvement for 15 years, for new arrangements of bellows, called "Enfers," of double and single effect, of continuous blast, applicable to all kinds of forges, and to all apparatus and uses where the aspiration and compression of air are required, Nov. 29, 1838.

214. Fillon, Jean Gabriel, of Paris, rue Saint Martin, No. 112, a sixth patent of improvement and addition to the patent of invention and improvement for 10 years which he obtained March 14, 1838, for a new system of levers, called "levers Fillon," for the purpose of terracing, of removing earth and filling up cavities, applicable to commercial transport, to lading and unlading vessels, and particularly to railroads, &c., Nov. 29, 1838.

215. Fouquet and Son, of Rugles, département de l'Eure, a patent of importation for 15 years, for a machine for manufacturing the heads of pins by a new system, Nov. 29, 1838.

216. Guérineau, Favre, of Poitiers, represented at Paris by Mendez, rue Saint Martin, No. 245, a patent of invention for 10 years, for melting and refining tallow by steam, Nov. 29, 1838.

217. Labbé, Pierre François, of Paris, rue Amelot, No. 52, a patent of invention and improvement for 15 years, for two machines for grinding chocolate, oleaginous grains, colors, &c., Nov. 29, 1838.

218. Lamare, Jacques Dorat, and Lehec, Louis Nicolas, of Paris, faubourg Saint Martin, No. 122, 1st, a patent of invention for 5 years, for processes of staining, without sintering, mirrors and other kinds of glass. 2d, a patent of improvement and addition for the above object, Nov. 29, 1838.

219. Letestu, Jean Marie, of Paris, rue Jean Jacques Rousseau, No. 18, 1st, a patent of invention for 5 years, for a new pump, called "pompe Letestu," 2d, a first patent of improvement and addition: 3d, a second patent of improvement and addition: 4th, a third patent of improvement and addition for the above object, Nov. 29, 1838.

220. Letestu, Jean Marie, of Paris, rue Jean Jacques Rousseau, No. 18, a second patent of addition and improvement to the patent of invention for 15 years, which he obtained Sept. 20, 1837, for a new lock with balance bolt, Nov. 29, 1838.

221. Liebermann, Joseph Antoine Joachim, of

Paris, rue de Charenton, No. 111 bis, a fourth patent of improvement and addition to the patent of invention for 10 years which he obtained Sept. 9, 1837, for an apparatus for the purpose of extracting the juice of rasped beet-root when cold, Nov. 29, 1838.

222. May, Streblehill Norwood, of Paris, rue de la Paix, No. 28, a patent of invention and improvement for 15 years, for extracting the fibres of the banana tree, and applying them to different manufactures, and likewise for reducing to pulp all tropical fibrous vegetables, for the purpose of manufacturing paper thereof. 2d. a patent of improvement and addition for the above object, Nov. 29, 1838.

223. Montrieux, René, and Tessier, René, of Angers, a patent of invention for 5 years, for a machine for improving the manufacture of slate, Nov. 29, 1838.

224. Morize, Etienne Joseph, and Vatard, Louis Jean Baptiste, of Paris, rue Mauconseil, No. 1 bis, a patent of invention and improvement for 5 years, for a new kind of jewel, called "peigne-parure," for the head-dress, Nov. 29, 1838.

225. Obin, Pierre Louis Geoffroy, of Paris, passage Choiseul, No. 82, a patent of improvement and addition to the patent of invention and improvement for 5 years, which he obtained June 1, 1838, for an improved elastic cork breast with nipple, Nov. 29, 1838.

226. Rogers, Louis, of Paris, rue de l'Université, No. 151, a patent of invention for 15 years, for fixed boats, resting on the bottom of rivers and canals, Nov. 29, 1838.

227. Rosagliis, Cesar, of Paris, rue de Caumartin, No. 41, a patent of invention and improvement for 5 years, for a new gun, Nov. 29, 1838.

228. Satur, Marie, of Paris, rue de la Michodière, No. 12, a patent of invention for 5 years, for an oil, which he calls "huile Marie Satur," for the purpose of preventing the hair from turning grey, Nov. 29, 1838.

229. Vaconsin, Pierre Louis Jean Baptiste Alexandre, of Paris, rue Saint Lazare, No. 15, a patent of invention and improvement for 5 years, for a new staircase bannister, called "barreux Vaconsin," all of a piece, and embellished by a new process with all imaginable metallic ornaments, Nov. 29, 1838.

230. Le Comte Vandermeere, Auguste, of Paris, rue de la Chaussée d'Antin, No. 12, a patent of importation for 5 years; for a new mode of refining salt by steam, Nov. 29, 1838.

231. Weston, Thomas, of London, represented at Paris by Truffaut, rue de Favart, No. 8, a patent of importation for 10 years, for various mechanical combinations for cutting, bending, joining, urching, and boring sheets of metal, and which are applicable to other purposes, Nov. 29, 1838.

232. Mme. Veuve Bernier de Valathienne, of Paris, rue des Amandiers Popincourt, No. 32, a patent of invention for 5 years, for wadding in pieces of an ell broad, by from 2 to 10, exclusively, long, Nov. 30, 1838.

233. Barruel, Ernest, of Paris, rue Saint Jacques, No. 272, and Troussau, Armand, of Paris, rue Caumartin, No. 11; 1st, a patent of invention for 15 years, for processes for the purpose of hardening tallow, fats, and fat-acids, and the application of these processes to the manufacture of candles; 2d, four patents of improvement and addition for the aforesaid object, Dec. 5, 1838.

234. Cabarrus, Dominique Adrien, of Bordeaux, allées de Tourny, No. 7, a patent of invention and improvement for 5 years, for modifications in the application of shuffle-boards (*galets*) for the purpose of diminishing the friction of axle-trees, Dec. 5, 1838.

235. Chevereau, Auguste Jean, of Paris, rue Saint Marc, No. 14, a patent of invention for 5 years, for the manufacture and use of an iced (anglaco) envelope for cubeb pepper, rhubarb, and other powders of a disagreeable odor, as well as for liquids of this last kind, such as copahu balsam, oil of the palma christi, &c., Dec. 5, 1838.

236. Conté de Levignac, of Paris, passage Vero Dodat, No. 33, a patent of improvement and addition to the patent of invention for 15 years, which he obtained Nov. 22, 1838, for a new system of paving, and for a new artificial stone, Dec. 5, 1838.

237. Courtois, Rose, of Paris, rue des Vieux Augustins, No. 34, a patent of invention for 5 years, for a new cornet with piston, which he calls "cornet à coulisse," Dec. 5, 1838.

238. Domingue, Louis Alexandre, of Paris, rue Censié, No. 27, and Boudet, Félix Henri, of Paris, rue du Four Saint Germain, No. 88, a patent of invention for 15 years, for a chemical process for preparing all skins of animals to be tanned and tawed, Dec. 5, 1838.

239. Duval, Frédéric, Grande rue, No. 192 and 196, at Vaugirard, precincts of Paris, a patent of invention for 5 years, for a new composition which may be used as a substitute for masonry, Dec. 5, 1838.

240. Faivre, Charles, of Paris, quai de Billy, No. 38, a patent of improvement and addition to the patent of invention for 10 years which he obtained Jan. 20, 1837, for a new oscillating steam-engine, Dec. 5, 1838.

241. Fournier, Laurent Jos. Ferdinand, Châtelaillon, de Clignancourt, No. 38, precincts of Paris, a patent of invention for 15 years, for a new system of pipes with flat surfaces, which he calls "tuyaux mobiles," Dec. 5, 1838.

242. Freson, Trumence Nicolas, of Paris, rue Saint Victor, No. 65 and 67, a patent of invention and improvement for 5 years, for a new mode of application in any shade on a preserved ground for all kinds of tissue of animal or vegetable substance, Dec. 5, 1838.

243. Ganilh, André, of Paris, rue du Cimetière Saint Nicholas, No. 16, a patent of invention for 10 years, for a new system of steam-engine, Dec. 5, 1838.

244. Guebhard, son, Pierre François, represented at Paris by Reynaud, rue du Temple, No. 119, a patent of invention for 15 years, for improvements in steam-engines, Dec. 5, 1838.

245. Happey, Alexandre Jacques, of Paris, quai des Célestins, No. 22, a patent of invention for 15 years, for apparatus called "conservateurs frigoriostes custocalor," for preserving the physical state of bodies, whether it be natural or factitious, Dec. 5, 1838.

246. Jourhut, Pierre, of Lyons, petite rue Longue, No. 7, a patent of invention for 5 years, for a portable apparatus for the purpose of taking at private houses douche and Russian vapor baths, Dec. 5, 1838.

247. Lestrille, Jean Baptiste, and Beymond, Pierre Joseph, of Grenoble, a patent of invention for 5 years, for gas lanterns, called by him economical unalterable lanterns, Dec. 5, 1838.

248. Lethuillier, Laurent, of Rome, represented at Paris by Armengaud, rue des Filles du Calvaire, No. 6, a patent of invention for 5 years, for a new machine for manufacturing, by compression, tiles, bricks, and other similar articles, Dec. 5, 1838.

249. Maire, Charles, of Strasbourg, a patent of invention for 15 years, for a new chemical process of manufacturing acetates, and particularly acetates of lead, Dec. 5, 1838.

250. Mériaux, Claude, of Saint Etienne, département de la Loire, a patent of invention for 5 years, for a means of casting in any kinds of metal and of a piece the mounting and plate of guns and pistols, and also the barrel and spring of single barrelled guns and pistols, Dec. 5, 1838.

251. Mortier, François, of Vaison, a patent of invention and improvement for 5 years, for an air pump, Dec. 5, 1838.

252. Pfeiffer, Jean, of Paris, rue Montmartre, No. 132, a patent of invention and improvement for 5 years, for a square piano, Dec. 5, 1838.

253. Ragon, Jean Baptiste Marie, of Paris, rue du Faubourg Saint Martin, No. 174, a second patent of

improvement and addition to the patent of importation for 15 years obtained May 17, 1833, by Dearne, for a new mill for grinding corn and sifting the flour, Dec. 5, 1838.

254. Regnault, Léopold, of Paris, rue Vieille du Temple, No. 88, a patent of invention for 5 years, for a fender adapted to fire places, Dec. 5, 1838.

255. Séguin, sen., Marc, and Lechevalier, Victor, of Paris, rue du Bac, No. 82, a first patent of improvement and addition to the patent of invention for 15 years, which they obtained July 18, 1838, for the preparation of an artificial bitumen, Dec. 5, 1838.

256. Séguin, sen., Marc, and Lechevalier, Victor, of Paris, rue du Bac, No. 82, a second patent of improvement and addition to the patent of invention for 15 years, which they obtained July 18, 1838, for the preparation of an artificial bitumen, Dec. 5, 1838.

257. Simonard, Vincent Louis Frédéric, of Paris, rue de la Sorbonne, No. 7, a patent of invention for 15 years, for a new system of centre of gravity "fixo mobile rotatif," for the purpose of towing vessels up rivers and canals, either by the reaction of the currents as morer, or by steam-power, Dec. 5, 1838.

258. Burlet, François, of Lyons, rue de la Barre, No. 4, a patent of improvement and addition to the patent of invention for 5 years, which he obtained April 21, 1837, for a new kind of coffee, called by him "café indigene de santé," Dec. 5, 1838.

259. Coulaux, sen., and Co., of Molsheim, département du Bas Rhin, a patent of invention for 15 years, for changes and improvements in the process and manner of mounting and adjusting the blades of scythes, with backs turned over, Dec. 5, 1838.

260. Delachauvée, Charles Antoine Toussaint, of Paris, rue d'Enghien, No. 8, a patent of invention for 15 years, for the composition and application of an artificial asphalt, possessing the properties of Seyssel asphalt, Dec. 5, 1838.

261. Descroisilles, Paul, of Paris, hôtel d'Europe, rue Notre Dame des Victoires, a patent of invention for 5 years, for new evaporating and distilling apparatus, Dec. 5, 1838.

262. Ducoin, Jean Sylvestre, of Rouen, rue du Sacré, No. 7, a patent of invention for 5 years, for a distilling apparatus, which he calls "thermophore," more particularly applicable to heating apartments, shops, carriages, hot-houses, &c., Dec. 5, 1838.

263. Maillard, Alexandre, of Paris, rue Sainte Avoye, No. 69, and Bovy, Henri, of Paris, rue de Malte, a patent of invention for 5 years, for an apparatus for the purpose of disinfecting and clarifying water, Dec. 5, 1838.

264. Nicolle, Wallringue, Brongniart, and Monroy, of Arras, département du Pas de Calais, a patent of invention for 5 years, for a process of obtaining alcohol from beet-root juice, Dec. 5, 1839.

265. Noirot, Benigne Eugène, of Paris, rue de Richelieu, No. 16, a patent of invention for 5 years, for a calmative ferruginous chocolate, Dec. 5, 1838.

266. Oberhauser, Georges, and Trécourt, Achille, of Paris, rue Saint Dominique Saint Germain, No. 9, a patent of improvement and addition to the patent of invention for 5 years, which they obtained Aug. 17, 1837, for a vertical achromatic microscope with fixed mirror, and "platine à tourbillons," (?) working without displacing the optic axis, with regard to the object submitted to the observer, Dec. 5, 1838.

267. Pezerat, Pierre Joseph, of Paris, rue Montholon, No. 13, a patent of improvement and addition to the patent of invention and improvement which he obtained Dec. 24, 1837, for the manufacture and use of a bitumen, called "granitique," Dec. 5, 1838.

268. Triger, Jacques, of Mons, represented at Paris by Lascases, rue Neuve du Luxembourg, No. 23, a patent of invention for 5 years, for a process of lining shafts, adapted to working mines, and which he calls "cavlage tubulé," Dec. 5, 1838.

(To be Continued.)

FOREIGN CORRESPONDENCE.

FRANCE.

The *Gazette de Liege* says:—On Monday last, M. Buckens, professor to the Academy of our town, cast, at the cannon foundry, the bust of the statue of Grétry, which the commune of Liege had commissioned him to execute. On Tuesday that part of the statue was exposed. We were present at the operation, and we did not witness it without emotion. It is well known that a work of this kind requires a host of minute precautions; the least oversight, the most trifling accident, might prevent success; and however skilful the artist, or however great the confidence which his well-known talent inspires, the moment of proving his success is accompanied with a painful degree of uncertainty. We participated, therefore, in the anxiety of the artist, when his work was about to be uncovered; but scarcely had the first blows been given to the plaster which disclosed the bronze,—scarcely had the bust met the view—before we recognised the features of the harmonious musician, whose memory is so dear to the inhabitants of Liege. It was the expression which well became the author of so many and such touching melodies,—that countenance impressed with melancholy and refinement—it was Grétry! The bronze had been faithful to the design of the artist; the reputation of M. Buckens was again exalted; Liege was about to possess an additional monument. We were unwilling to depart without taking a view of the bronze statue of Rubens, which the city of Antwerp has entrusted M. Buckens to execute. One piece remains to be cast; the bust is completely finished, and it is a perfect piece of workmanship. Even at present, this portion of the statue produces the grandest effect. The noble bearing of the head, that forehead where thought seems still to reside, the truly royal character of the countenance—all announce that you are in the presence of the prince of painting.

BELGIUM.

ON THE CONSTRUCTION AND MANAGEMENT OF BLAST FURNACES.

There is no question in metallurgy that has been so much disputed as the following:—“What is the most useful and convenient height for blast furnaces?”

The discovery of carburet of iron (cast-iron) is modern; the ancients were only acquainted with iron, and the proto-carburet of iron (steel). Their method of fabrication has been continued to the present day, and is known as the Catalonian method. It was not till the fifteenth century that the art of reducing the oxides of iron was discovered. The first blast furnaces were established in Lorrain, and the fame of the inventors has continued as great as the service they have rendered to mankind. In all the arts, discoveries are so improved upon, that the merit of the original idea becomes shortly all that remains to the inventor. The discovery of blast furnaces forms an exception to this rule. In fact, these furnaces continue at present to be constructed in the same manner that they were three hundred years ago. The alchemists, who by their ardor, their love of science, and of glory, might have improved the newly-discovered art, did not attend to it. Without disputing the great services they rendered to chemistry, we may say, that, lost in their researches after an impossibility, they did nothing for metallurgy, which was, nevertheless, the primary object of their indefatigable labors.

The art of constructing and managing blast furnaces, continues, therefore, the same as it was two hundred years since. We reason, perhaps, better

than our predecessors; we have, besides, a new nomenclature at our service—the language of modern chemistry,—but as regards the mode of operation, we have not improved on the method of our forefathers. We call that carburet of iron, which they called crude iron; and we call that an oxide to which they gave the name of calx; this is nearly all the progress we have made.

The first blast furnaces were only from sixteen to eighteen feet high; this improvement was in fact only a natural transition from the ancient method to the modern one, and it is more particularly respecting the height of the furnaces that the imaginations of modern inventors have been exercised. We have seen in this country, furnaces sixteen feet high; we have also seen one that was not less than thirty-six feet in height. We have, therefore, furnaces of all dimensions; but it may be said, can we use with equal success a furnace sixteen feet high, and one of the height of thirty-six feet? This is certainly not our opinion, though we are quite convinced that it is impossible to give any fixed rules on this point. The principles we wish to establish on this important matter may be thus stated: *The height of the furnace ought to be proportioned to the nature of the combustible employed, and to the force of the blast.* According to these principles, the combustibles placed in a blast furnace will produce a greater effect if they be not too much consumed before they arrive at the tuyere (nozzle of the bellows). That is, notwithstanding an opposite opinion has been maintained by a great many writers, we do not consider carbonic acid gas and carburetted hydrogen as tending to the reduction of the oxide, but as bodies heating the mineral and preparing it for reduction; which operation to be well performed, ought only to take place before the blast from the bellows. We say that we do not consider carbonic acid gas as the reducer, for this would be to confound the effect with the cause. This gas is in all cases the product of the reduction; and as we can only occasion reduction by the use of carbon, the charcoal will produce the greater effect if it arrive at the tuyere unconsumed. It is easy according to these principles to regulate the height of the furnaces. For instance, those who have not the means of obtaining a strong blast should be cautious, whatever be the quality of the combustible, not to make a very high furnace; for the charges would descend too slowly, and the charcoal would be consumed before its arrival at the blast. Those, on the contrary, who, having good combustibles, can also use a strong blast, might build their furnaces thirty feet high without inconvenience; for in that case, the weight of the charge being exposed to a strong blast, the charcoal would arrive at the nozzle of the bellows as quickly as in a lower furnace, which is acted on by a blast proportionally weak.

Thus, then, all other things being equal, the height of furnaces ought to be, 1st., in relation to the force of the blast, and so calculated that the charges should arrive at the tuyere in eight or ten hours, at least. 2d, in relation to the quality of the combustible. In fact, the charcoal of light wood being easily consumed, it is the more requisite that it should arrive quickly at the blast, where it is to produce its useful effect; but this charcoal containing fewer mineral substances than the charcoal of harder woods, requires a less powerful blast, therefore the tower of the furnace should be so low, that in the latter case, as in the former, the charges may arrive at the blast in the same space of time; that is to say, in from eight to ten hours.

The principles that we have pointed out, as they are new, will no doubt be attacked. Experiments will be adduced, from which it would appear that carbonic acid gas has effectually reduced oxide of iron. We know these experiments, but we have always been persuaded that the pretended carbonic acid gas contained the carbon in excess, and that the reduction was thus effected, as in the blast furnace. By attending to the rules we have laid down, it would be easy to construct and manage furnaces. To cause the charge to arrive at the blast in the requisite time, is the especial duty of founders. It

is not enough that the blast acts under the pressure ordinarily considered sufficient for the proper working of furnaces; if the charge moves slowly, the pressure ought always to be increased.

The same rules would apply rigorously to hot-blast furnaces; only in the latter the force of the blast should be regulated with constant attention. In order to obtain regular results, the founders and directors ought to inspect every instant the manometer and the thermometer. The expansive force of hot air, augmenting or diminishing as its temperature increases or lessens, it is evident that to maintain a regular blast in the crucible the power of impulsion ought to be subjected to the same variations.

The preceding remarks apply only to foundries in which the combustible used is charcoal.

RAILWAY INTELLIGENCE,
DOMESTIC AND FOREIGN.

MIDLAND COUNTIES RAILWAY.—The works on this line as far as Leicester, are in an extreme state of forwardness, and there is not the slightest doubt the first week in May will see the train flying over the high embankment, or through the deep cuttings, to that place. From Long Eaton to Sutton Bonington, two lines of rails are completed—the splendid bridge over the Trent being now crossed by engines and trains of wagons, and the tunnel being also quite passable. At Sutton Bonington there is a deep cutting beside the churchyard, and station is building, which will require some little work, but the number of hands employed will soon complete that. Past Normanton-upon-Soar and Loughborough all is finished, the station at the latter place being a very large one; but at Barrow-upon-Soar there still remains considerable cutting to be done, one place being cut down to 50 or 60 feet, and not being yet completed. At Cossington there is a little work, but at Sileby this is counterbalanced by there being a total completion, comprising several very high bridges, which support the line above the village streets, and also some exceedingly deep cuttings. At Syston, the bridges and stations are also nearly finished, the latter being only one story high, but still very compact, and containing plenty of room. At Thurmaston, about a mile and a half from Leicester, a piece of embankment is yet to be laid, and about a mile from Leicester there is some embankment required, but near to Leicester the works are in an extreme state of forwardness. The station is a noble one; the front facing the street is supported by five huge stone pillars. The engine-house, dépôt for carriages, workshops for engineers, &c., are on a most extensive scale. The bridges across the railway at Leicester, viz., across the Humberstone Road, London Road, &c., are finished, but at the top of New Walk a tunnel is being built, which will require some time to complete. About a mile and a half past Leicester, a very fine viaduct is in course of erection; and at Rugby another viaduct, not equalled by any in the kingdom for workmanship, is finished. In short, on the whole, the line may be fairly said to have sprung into being, so quick has been its progress. A new plan has been adopted at Leicester in building the bridges, viz., to build the side walls so high as to prevent any one looking over, and thus, at the same time, protecting numbers from accidents. The process of blasting is much practised at Leicester. In conclusion, we are sorry to add, that, within the last fortnight, two men have been killed on the works at separate times. A horse was also killed on Tuesday morning week by falling down an embankment. The directors intend giving a grand opening day when the trains run to the Rugby station for the first time.—*Notts Review.*

We have the gratification to announce to our readers, that on the 4th inst., the directors of the North Midland Railway intend to open their line from Sheffield to Darby, a distance of about forty miles, where a communication will be effected with the

railways already opened direct to the metropolis. The directors of the York and North Midland Railway will also open on the same day a further portion of their line, extending it to Burton Salmond Station, near Ferrybridge, and arrangements are in progress to forward passengers by coach from Burton Salmond to the railway station near Sheffield, and thence by railway to London, Birmingham, &c. We understand that the York directors also intend to have a train out in the afternoon or evening, so that passengers can arrive in town early the following morning.—*Midland Counties' Herald*.

LANCASTER AND PRESTON.—The necessary arrangements are being made with the utmost despatch preparatory to opening the Lancaster and Preston Railway in the month of June next. Great progress has been made with the station at Lancaster, which will be a very handsome structure, and highly ornamental to the southern entrance of the county town.

EMBANKMENT ON THE NORTH UNION RAILWAY.—It will be recollect that for a long time, notwithstanding all the skill and ingenuity of the eminent contractors, the embankment south of the Ribble Viaduct continued from time to time to give way at different places. We understand that it has now become firm and consolidated in all its parts, and that there is not the least apprehension of a recurrence of the eruption.—*Preston Chronicle*.

We understand that since the opening of the Great Western Line to Reading, the last of the Bath and Bristol coaches has been put upon the railway. The same has been the case with the Oxford and other coaches.—*Railway Times*.

DUBLIN AND KINGSTOWN RAILWAY.—At the adjourned meeting of the Dublin and Kingstown Railway Company recently held, it was resolved to reduce their fares to their original amount.

BELGIUM.—A most decided movement is being made at the present time in favor of iron railways. The following is an extract of a letter from Magdeburgh, in the *Gazette de Cologne*, dated the 8th April. —“We hasten to communicate to you the news, that the construction of a railroad from Halle by Cassel to Lipstadt, will shortly be commenced at the expense of the government, and under the direction of the Administration of Posts. The works will last three years. The royal consent has been given, and ten millions of thalers have been granted for the purpose. The railway will be constructed under the direction of our excellent engineer, Major Gruson, who will set off to-morrow to make preparations.”

GERMANY.—The railroad between Weisbach, Mayence, and Frankfort, was opened on the 13th of April.

HAVRE AND ROUEN RAILROAD TO PARIS.—The *Courrier Français* notices the negotiations which are on foot for the proposed railway from Paris to Rouen, and expresses its regret that the new Minister of Public Works, Count Jaubert, should have interposed an obstacle to this undertaking, by desiring, as a condition of the Government support, that it should be extended to Havre. The estimate for the line to Rouen is fifty millions of francs, of which four English companies have, it appears, offered to subscribe twenty-five millions. M. Dufaure having promised that the State should contribute seventeen millions, there would be only eight millions to apply for to French capitalists; but as M. Jaubert is not willing to grant the seventeen millions promised by the late Ministry, except on the condition of the extension of the railway to Havre, and as to effect this, fifty millions more would, on account of the greater difficulty of the proposed extension, be required, the deficiency, instead of being only eight millions, would be fifty-eight millions, a sum which would not, according to the opinion of the *Courrier*, be raised, and, consequently, the demand of the Minister of Public Works will, if persisted in, be fatal to the whole enterprise. The *Courrier* adds, with great reason, that the system of leaving things undone, because all that is desired cannot be done at once, is fatal

to the public interest; and so far from agreeing with Count Jaubert in a view which would render so large a capital necessary, asks why even fifty millions should be employed, when by making use of the railway to St. Germain the remainder of the line to Rouen might be made for forty millions, in which case the State would have to furnish only fifteen millions instead of seventeen millions. The importance of a railway from Rouen to Havre is not, says the writer in the *Courrier*, such as to warrant the demand of Count Jaubert, as the communication between those towns is rapid by water; and, with a railroad to Rouen only, the distance between Paris and London, might be performed in 18 hours. Here, however, the *Courrier* is in error, for allowing three hours by railway to Rouen, seven hours from Rouen to Havre, which is the average time, only ten hours from Havre to Southampton, which is less than the average, and three hours from Southampton to London by railway, the time would be 23 hours instead of 18. Even this, however, would be a saving of eight hours, as compared with the present mode of communication between Rouen and Paris, by diligence, when the roads are in their best state; and of 12 or 13 hours when they are bad, to say nothing of the numerous accidents which occur in the road to Rouen when great speed is attempted by the diligence.—*Galigani of Monday*.

STEAM NAVIGATION.

The *Moniteur Industriel* exhibits considerable jealousy at the progress we have made in steam-navigation, particularly at our Transatlantic steam-navigation. If the French government, it observes, had assisted the commerce of Bordeaux on the first attempt to establish that mode of navigation two years ago, France would now have had Transatlantic steamers.

The city of Marseilles is stated by this journal to have taken up the matter with spirit, and all classes in the town and neighborhood have entered into a subscription to establish a Transatlantic line of steam ships. The subscription list was filled in a few days. The *Moniteur Industriel*, in urging the government to assist in the promotion of steam-navigation, observes:—“We shall be deprived of our American trade by England, if the government does not quickly offer even to our great ports of commerce effectual encouragement for the building of Transatlantic steam-ships. The spirit of association having received a terrible blow at Paris, it is advisable to spread it through our departments. The establishment of Transatlantic steamers is one of the most fitting occasions that can be presented, and the example set by Marseilles ought to excite universal attention. The government understands little about commercial affairs, but in that city nothing else is thought of.”

STATISTICS OF ATLANTIC NAVIGATION.

The following comparative statement of sailing and steam voyages across the Atlantic, during 1839, extracted from a New York paper, will prove interesting:—

In the Old or Black Ball line of packets, the average length of twenty-three voyages to England was 22½ days—one being 18 days; five 19; six 20; one 21; two 22; two 24; one 25; one 26; two 28; one 29; and one 36 days. Twenty-three voyages from England, average 33 days 17 hours:—the three shortest being 22, 23, and 25 days—the three longest being 44, 45, and 48 days.

In the Dramatic Line, eleven passages to England, were made in 228 days, average 20½ days—the shortest being 17,—the longest 25. Twelve passages to New York were performed in 369 days, average 33½ days—the shortest being 23 days,—the longest 38 days.

In the Star line, the eleven outward passages

were made in 206 days, and they averaged a fraction over 24 days each. The shortest was made in 21 days, and the longest in 28.

The longest homeward passage was made in 45 days, and the shortest in 27. The eleven were made in 398 days.

In the swallow Tail line, the eleven outward passages were made in 248 days, and averaged 22 days and 12 hours each. The longest was made in 31 days, and the shortest 17.

The homeward passages averaged 35 days and a fraction each. None made less than 28 days, and none over 45. The twelve were performed in 421 days.

PASSAGES OF THE STEAM SHIPS.—The passages of the Great Western from England, average 16½ days each, and the whole time occupied in making six western passages were 99½ days. The shortest was made in 13 days, and the longest in 21½.

The passages to Bristol averaged 13 days and 9 hours each. The longest was in 15 days, and the shortest in 12½. The six eastern passages were made in 80 days and 12 hours.

By two of the passages, passengers and despatches reached Paris, by the way to England, on the 15th day after leaving New York. They also arrived in London and Liverpool on the 13th day.

THE BRITISH QUEEN.—The shortest passage from England was made in 14 days and 21 hours; the longest in 20 days and 9 hours. The shortest passage hence was performed in 13½ days, and the longest in 22½.

The western passages averaged 17 days and 8 hours each. Those made to the eastward 16 days and 14 hours.

THE LIVERPOOL has 13 hours' steaming further to go than either the Great Western or the British Queen.

The passages to New York averaged 17 days and 4 hours each. The longest was made in 18 days and 12 hours, and the shortest in 16 days. Those to Liverpool averaged 15 days and 16 hours. The shortest was made in 13½ days, and the longest in 17 days and 12 hours.

(POSTAGE STAMPS.)

The postage stamps about to come into use on the 6th instant, will be purchaseable at every post-office in London, and all licensed vendors of stamps. Stamps of two prices will be issued—penny and twopenny. The penny stamps will be printed in black, the twopenny in blue ink. At each side of the covers, directions respecting the rates of postage, the prices of stamps, &c., are given. The information about stamps is as follows:—

PRICES OF STAMPS.

“At a post-office—Labels 1d. and 2d. each. Covers 1½d. and 2½d. each.

“At a stamp distributor's as above, or as follows:—

“Half-ream, or 240 penny covers, 12. 2s. 4d., penny envelopes, 11. 1s. 9d.

“Quarter ream, or 120 twopenny covers, 11. 1s. 4d., twopenny envelopes, 11. 1s. 1d.

“At the stamp-offices in London, Dublin, and Edinburgh, as above, or as follows:—

“Two reams, or 960 penny covers, 4l. 7s., penny envelopes, 4l. 5s.

“One ream, or 480 twopenny covers, 4l. 3s. 6d., twopenny envelopes, 4l. 2s. 6d.

“Covers may be had at these prices, either in sheets, or cut ready for use. Envelopes in sheets only, and consequently not made up. No one, unless duly licensed, is authorised to sell postage stamps.

“The penny stamp carries half an ounce (inland) the twopenny stamp one ounce. For weights exceeding one ounce, use the proper number of labels, either alone or in combination with the stamps of the covers or envelopes.”

Thus, it appears, that between the purchase of a single cover and of 960, there will be an allowance of about 14 per cent. A single label may always

be bought at every post office for 1d., and a cover for 1½d. The price for a dozen or more covers purchased of a licensed vendor, will be left for competition; everybody, however, having the opportunity of buying 960 penny covers for 4l. 7s., at the chief stamp-offices, or 240 for 1l. 2s. 4d. of a stamp distributor. Besides the design on the covers and envelopes, the word "postage" on an engine-turned ground, is printed on the lower fold at the back. The covers and envelopes are printed on paper manufactured by John Dickinson. The peculiarity of this paper, is the insertion of lines in the wool of the paper; three red lines towards the inner, and two blue lines towards the outer side of the cover. The lines are differently placed on the envelopes; a series of lines being at either corner, each having a blue line towards the outside, between two red lines towards the insides. The labels, or adhesive stamps, have been printed on water-marked paper. Each label has the water-mark of a crown; and the sheet of labels, holding 240, has the word "postage" in each of the four borders. Certain combinations of letters of the alphabet are inserted in the two corners at the lower part of the labels; and as they are varied in every one of 240 labels, the probabilities nearly amount to a certainty that no one having a less stock than 240 will have two stamps with the same lettering in his possession. There can be no doubt that these peculiarities afford a very ample guarantee against forgery. At all events, in the case of the labels, it will not suffice that the forger engrave a single die, but he must produce several, each being identical in appearance in all respects, excepting the check lettering.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

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Brazils	Grenada (New)	Spain etc Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Helligoland	St. Lucia
Caraccas	Honduras	St. Vincent's
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To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY Morning, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsmen, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 9, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"C. H." Maidstone.—Our Correspondent's letter came to hand. The money, however, it was said to contain, was "not est." It evidently had been inclosed; but as evidently it had been abstracted while passing through the post office. Our Correspondent had better institute an immediate inquiry. His second favor has also been received.

"Pusey, jun." Axminster.—It is not likely that the Court of Chancery would grant an injunction to restrain the use of the invention, until the validity of the patent were established

at law; more particularly as the patent appears questionable and is so recent a date.

"Charles Long," Clifton.—The act "to facilitate the recovery of the possession of tenements after due determination of the tenancy" (1 and 2 Vic. c. 74,) extends to cases where the rent does not exceed 20s.

"A. Robinson," Ulverston.—The drawing may be made a part of the specification, but if a sufficient description can be given without it, it will be far better.

A further series of Engravings illustrative of the Locomotive Engines on the Belgian Railway, with accompanying details, will be commenced next week.

"P. B." Bristol.—Our Correspondent may forward us his views on the proposed subject, but we cannot promise them insertion till we shall have perused the M.S. The question is one of public interest, and would necessarily command attention.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



SATURDAY, MAY 2, 1840.

We published last week, a description of a new application of "centrifugal force" as a motive power, which is extremely ingenious, and has received the sanction of some practical engineers. We therefore felt it to be due to the inventor, and to the public, to give his own description of the apparatus, with which he favored us; particularly as we understood there were some parties to whom the invention had been confided who were about to take out patents for it to the prejudice of the original contriver of the machine. Under these circumstances, we hastened to lay before our readers the details which had

been hurriedly prepared by Mr. S. CARSON, through we confess we doubted the practicability of the plan, and did not exactly comprehend the diagrams, nor the application of the principles which Mr. CARSON laid down as the bases of his invention. We have since seen a rough model of the "generating engine," and have received from the inventor himself a more minute explanation of his engine; we are now therefore in a condition to give a more decided opinion on its merits than from the mere outline which was published last week, we were then enabled to do.

In the 33d No. of our Journal, we inserted an article on the "erroneous notions of Centrifugal Force," in which we endeavored to show, 1st. that the action of what is termed "centrifugal force" does not, in effect, proceed from the centres, but from the circumferences, of revolving bodies; and secondly, that there is no force generated by revolving bodies; and, consequently, that all machines constructed with the view of gaining power by rotary motion are, in principle, radically bad. It will be seen, therefore, that we are directly at issue with Mr. CARSON, who contends that by his method of applying centrifugal force, not only can power be gained, but a power of such magnitude, that it is only to be limited by the strength of the materials of which his engines are formed.

On a question of so much public importance, we shall not hesitate to enter at some length into a consideration of the principle on which Mr. CARSON's engine is constructed, and we fear it will be found, on examination, that notwithstanding the ingenuity of the contrivance, it is founded on an unsound basis. It would give us much pleasure if we could come to an opposite conclusion, for the advantages promised by such a power are incalculable.

We will, in the first place, explain in what manner Mr. CARSON proposes to apply centrifugal force as a moving power. The principle of the invention is founded on the well-established law of revolving bodies, that the tendency to fly from the centre (circumference?) is in proportion to the squares of the velocity; that is, a body revolving with double the velocity, exerts a quadruple pressure outwards. This fact is experimentally proved by the well-known apparatus termed the whirling table, in which a moveable body is made to revolve with any given velocity, and the weight it raises indicates the amount of the force exerted outwards. Now it seems to be very feasible, that as a double velocity, can be gained by a double power, whilst the

increase of motion thus communicated produces a quadruple force, that by increasing the velocity in arithmetical progression and gaining power in a geometrical ratio, any amount of force can be generated. It was upon this notion that the centrifugal pump was constructed; and, in our opinion, that is the simplest and the best mode yet invented of applying the centrifugal power. As Mr. CARSON's invention may be considered an addition to (we are sorry we cannot say an improvement of) the centrifugal pump, it may be as well briefly to describe it. The pump consists of an upright hollow shaft, turning upon a pivot fixed in the water, to which shaft two or more hollow arms are attached, nearly at right angles. The shaft being filled with water, a rotatory motion is given to it by a handle at the upper end, when the water in the hollow arms is thrown out violently by the centrifugal force; other water rises up the shaft to supply its place, and in this manner, water may be raised to a height of thirty feet in large quantities. It is found, however, in practice, that the inconvenience of such a pump is more than equal to its mechanical advantage, if any, and it has consequently not been much used. Mr. CARSON, who has had considerable experience of the action of such a pump, is, indeed, of opinion, that it is attended with great loss of power, which loss increases with the velocity. It seems to us, however, that his engine depends upon the same principle, and that the objection which he conceives to be fatal to the use of the centrifugal pump, must be also applicable with even increased force, to his own invention. It is only fair, however, to add, that he denies the similarity of principle between the two engines. We will point out the difference between them, and let our readers judge for themselves.

The hollow upright shaft, with the horizontal arms attached of the centrifugal pump, forms the basis of Mr. CARSON's engine; but, instead of throwing off the water or other liquid at the end of the horizontal arms, he brings the outward pressure of the liquid to bear on moveable pistons, working in cylinders with slide valves, &c., in a manner similar to the machinery of a steam-engine; the liquid urged outwards by the rotary motion serving the place of steam. To the piston-rods are fixed cranks which work a force-pump placed near the centre of motion. By means of this force-pump, water or other liquid is forced up a feed pipe, which conducts to what is called the working engine. The

apparatus we have described is termed the generating engine, and the object of its action is to apply the centrifugal force of the liquid, which presses upon the pistons in the first cylinders, to work the force-pump, and the power exerted by the latter in forcing liquid through pipes to the working engine, is the operating power of that machine, which is supposed to be constructed in the same manner as a reciprocating steam-engine. It must also be added, that the generating engine is to be kept in motion by the working engine, which is thus to become the generator of its own moving power, and when once set in action, is to go on, without stopping, until the materials wear out.

The description we have now given of Mr. CARSON's engine will, we hope, by a reference to the diagrams in our last, and by a perusal of his own account of it, convey a correct notion of the mode of its working. It will be seen, that the engine *if it would work*, would realise the idea of perpetual motion, for it is supposed to generate within itself the source of motion. Unfortunately, however, this has not been done, and though the inventor is naturally sanguine that the effects he contemplates would be produced by an engine finished and completed in all its parts, we confess we see no probability of its accomplishment. We will now assign some reasons for our scepticism as regards the application of centrifugal force in the manner adopted by Mr. CARSON, and at some future opportunity we will revert to the subject, with a view to prove, more minutely than in our former article, the *impossibility* of gaining a motive power by centrifugal force.

Mr. CARSON assumes, that the tendency which revolving bodies have to fly outwards, is a force absolutely *created* by the rotary motion, and that the direction of the force is in a straight line from the centre. He conceives that this strictly centrifugal force is distinct from the tangential force, of which he says he makes no use in his machine. Now, if this principle be true, and if by giving double velocity to a revolving body a quadruple force is actually *generated*, the centrifugal pump would possess a boundless power of raising water, for in that machine there is no friction, but that of the pivots, to obstruct the action. Supposing a velocity of ten turns in a minute to throw out one gallon of water, sixty turns in the same time should raise thirty-six gallons. Mr. CARSON, however, says, the cause of such a pump not being efficacious is, that it throws off and wastes

its centrifugal force; whereas the peculiar merit of his invention consists in keeping a constant reserve of this power by employing and throwing off only a portion of the liquid employed. Now it appears to us, that the more correct explanation of this effect is, that the re-action of the water in the centrifugal pump, when thrown off from the hollow arms, counterbalances the action of the centrifugal force. The same cause would, in our opinion, be equally operative against the working principle of Mr. Carson's engine, for whether the quantity of liquid thrown off be more or less, the action of the engine must be proportioned to that quantity, and the reaction, in an opposite direction, will completely neutralise it, and prevent any gain of power. It is true, that when a body is made to revolve, its tendency to fly off increases as the squares of the velocity, whilst the power requisite to give that velocity is only in arithmetical progression; but when this apparent acquisition of force is applied to communicate motion to other bodies, the reaction is equal to the motion communicated, and will require a proportionate exertion of force to overcome it. The effect is the same in principle as the accumulation of power in a fly wheel; and as, in the latter case, though the power which is accumulated, *when there is no resistance*, appears to be an actual and an important creation of force, yet, when communicated to other bodies, their reaction would soon show that no more power is exerted than was originally required to give the revolving motion. We deny, therefore, the practicability of gaining a moving power by the pressure of centrifugal force on liquids, however applied, and in the complex machinery of Mr. CARSON's engine there would be so much power lost by friction, and that, though the contrivance is very ingenious, and calculated, on a first view, to raise the expectation that it is available as a motive power, a little consideration will prove that the actual and only effect of the various pumps, and cylinders, and slide valves, &c., would be to diminish the efficacy of the moving force.

We regret to be obliged to speak so strongly against an invention, which has evidently been the work of many years of anxious thought and labor. We cannot expect that what we have now written will convince the inventor that the principle on which he has proceeded is erroneous, as years of study and experience have not had that effect. We understand that a complete engine is about to be constructed on the plan, and, if it succeed, we can truly

say that our pleasure will be as great as our surprise; and as we were the first to publish an account of the invention, we shall be among the first to congratulate Mr. CARSON on having established a new principle in mechanical science.

ILLUSTRATION OF SYPHONIC ACTION.

The cause of water and other liquids rising up the leg of a siphon far above the level of the liquid, is generally admitted to be owing to the pressure of the atmosphere, which forces the liquid up the tube, when the superior weight of fluid in the longer limb, tends to produce a vacuum at the bend of the tube. This cause of siphonic action has, it is true, been doubted, and experiments have been made to prove that a siphon may act in *vacuo*; and, consequently, that the pressure of the atmosphere is not in all cases essential to the action. These exceptions to the rule are, however, of very limited extent, and the fluid can be raised but a very little height above the level, and in tubes of small bore; the force of cohesion, or capillary attraction, being, apparently, in these cases the substitute for atmospheric pressure.

It is generally supposed that it is essential to the action of a siphon, that all air should be excluded from the tube, and the idea that other causes than atmospheric pressure raise the fluid, is derived from this opinion; as the superior weight of the fluid in the larger arm of the siphon is conceived to produce the action by dragging up the shorter column, in the same way that the longer end of a rope or chain, hanging over a pulley, drags after it the shorter portion. It is, however, by no means necessary that the air should be excluded. In an apparatus which we had constructed for the transmission and purification of gas, consisting of large and small tubes communicating with each other, we were surprised, and considerably embarrassed, to find this system of tubes, the larger ones of which were only partly filled with water, acting as a siphon, and draining the vessel in which they were fixed—an effect that we had not contemplated. The first impression was, that the vessel leaked, but the continued stream of water from the tube that communicated externally, soon explained the cause of the drainage. This discharging tube was longer than the others, and it immediately occurred to us, that rarefaction of the air inside the tubes might be occasioned by this additional weight of water in the larger one, and that the pressure of the

atmosphere on the water in the vessel would consequently force it up the tubes to preserve the equilibrium, and keep up a continued efflux. In a siphon of this description, the principle on which siphonic action depends is clearly exhibited, for the chain of water is broken in several places, and the effect cannot therefore depend upon any mechanical adhesion of the particles of fluid.

NEW INVENTIONS.

HALL'S HYDRAULIC BELT.

We attended on Wednesday, a series of experiments made in presence of Colonel Calvert, Mr. Donkin, and other scientific individuals, with the new hydraulic machine, erected in Portman Market. The principle on which this machine is constructed, is similar to that of the rope pump; the principal difference being, that a thick woollen band is substituted for ropes. The experiments were conducted with a view to show the quantities of water raised by the belt from a depth of 130 feet, at different degrees of velocity. The belt, which is four inches and three quarters wide, passes round a drum 6.80 feet in circumference, immersed in water at the bottom of the well, and it passes also round a similar drum at the top. These drums are put in motion by a small engine, which is so regulated that the exact amount of power and velocity can be ascertained. It was found, that when the belt was travelling round the drums at the rate of 800 feet in a minute, the quantity of water raised in proportion to the power applied was 94.50—the steam engine then making 52 strokes in a minute. At a velocity of 860 feet in a minute, the engine making 56 strokes, the proportion of water raised was 95. At a velocity of 1015 feet and 66 strokes, the proportion was 86. At a velocity of 600 feet in a minute, the engine making 39 strokes, the quantity of water raised in proportion to the power was 92.50.

The average per centage of these four experiments was 92. It will be seen that the velocity which produced the greatest effect compared with the power employed, was that of the last experiment in which the belt was moving with a velocity of only 600 feet in a minute. The experiments we consider to be perfectly satisfactory, and proving that the machine is well adapted to lift water from great depths. We understand that Col. Calvert has engaged to drain the lake of Haarlem with this machine, and judging from the results of the experiments we witnessed, the quantities of water raised being much greater than could be done by any other method, we do not see why the effort should not be attended with success.

PLOWMAN'S IMPROVED COPYIST.

Mr. Plowman, of Oxford, the inventor of this very ingenious and useful article, is deserving of honorable notice. His *Portable Copying Letter-case* is a very great improvement on the so-called "manifold writers," as it will produce any number of copies of letters, at any distance of time, by the simple pressure of the hand. The directions for its use are so plain, and easy of comprehension, that its general adoption in counting-houses, and all offices where copies of letters are required, must, we should suppose, be a matter of course. It is, of its kind, very far superior to any thing we have yet seen.

BROWN'S PATENT KITCHEN RANGE.

Having had an opportunity of seeing Mr. Brown's new kitchen range in action, we can bear testimony to its efficacy, both as regards economy and

cleanliness. The following is a description of the apparatus:—

An iron plate is substituted instead of bars, before which roasting is performed in a very superior manner; which is evident from the regularity of the heat produced, and the entire freedom from dust, &c.

The top presents an extensive hot plate. The boiler forms the back and one side of the fire-place; the oven forms the opposite side: these are protected by thick cast-iron plates; the fire is thus entirely enclosed, consequently the whole heat produced is applied for all the purposes of cooking; it is thus obvious a very small proportion of fuel is requisite, compared with the quantity used in the ordinary range.

Near the top of the roasting plate, a small door is introduced, which gives this stove the advantage of an enclosed fire for cooking, and when not required for that purpose the door may be opened, affording at once the comfort of an open fire, combined with a decided saving in the consumption of fuel, as the draught admitted passes over the fire, which has a tendency to check the air admitted below, thereby producing a saving in the consumption of fuel. A greater supply of hot air is also produced, which passes entirely round the oven, consequently, less fire is requisite for baking, which is performed in a superior manner, the heat being more regular than in the ordinary mode of fixing them.

Below the roasting plate, are four gothic windows, in which tale is introduced to show the reflection of the fire; beneath these windows is the a-hole, which is also enclosed; here the draught is admitted to the fire through a ventilator.

On the top is a sliding plate, where the fire is supplied with fuel.

The roasting plate is enclosed by a moveable front, which is left open at the top and bottom, consequently a current of air is produced between the two plates, and thus a considerable portion of hot air is generated, which may be conveyed to any part of the house.

From the peculiar construction of this range, every facility is afforded for all the varieties of cooking, consisting of roasting, baking, boiling, stewing, frying, steaming, &c. &c., all of which may be carried on at the same time, and at one half the cost of any other description of range.

TURNING LATHES.

At a recent meeting of the Society of Arts, the large silver medal was awarded to Mr. J. Hicks, jun., of Bolton, for an improved expanding mandrel for turning lathes. It is necessary that a mandrel should fit so accurately, as to bite on the inner surface with a force sufficient to counteract that of the tool, and, in the ordinary mode, the same mandrel cannot be used for two pieces of different diameters. Consequently, in many engineering establishments, a stock of mandrels is kept, amounting to 600 or 700. Mr. Hick proposes to do the same work with eight sizes of the mandrel, from one inch and a quarter to ten inches. He effects his object by having the spindle of the mandrel shaped on the frustum of a cone, on the face of which are four dove-tail grooves to receive wedges, the under faces of which have the reverse inclination of the cone, so that the lines of their outside faces are always parallel with the axis of the mandrel. A nut is screwed on the spindle, which acts on the wedges through the medium of a conical cup, which drives them up to their bearings inside of the work.

ELECTRO-MAGNETIC ENGINES.

A new galvanic battery, called the mechanico-chemical battery, has lately been invented by Mr. A. Smee, of the Bank of England, which promises to supersede the other forms now in use. Its principle is simple, as its power depends entirely upon finely-divided platinum, deposited by means of a simple galvanic arrangement upon any other metal, which is unacted upon by dilute sul-

phuric acid, the only fluid used. At present, he finds that silver or plated copper answers admirably for the reception of the platinum, but iron, when platinised, has the same power for a time as these metals, though the iron becomes gradually dissolved. He also finds that, with his battery, porous tubes can, in most cases, be dispensed with, and that the battery can be advantageously made in any of the various forms hitherto employed. Its effects are more powerful than those of the sulphate of copper batteries, and in action it is less expensive. The practical application of galvanic batteries, except as an instrument of research in the laboratory of the student, is principally confined to the explosion of powder under water, or in other mining operations, for which purposes it appears useful, from its being small in compass, and requiring scarce any manipulation. Whether it may ever be used for locomotive purposes, still remains doubtful, but who knows whether in future ages electro-magnetic engines may not take the place of steam engines?—*Atlas.*

SELF-ACTING WASTE-BOARD.

A paper and drawing were brought before the meeting, of a self-acting waste-board invented by Mr. Rhodes, the civil engineer, and erected at Naburn Lock, on the river Ouse, near York. Mr. Rhodes had been consulted on the best mode of improving the navigation of the Ouse, which had become much obstructed by the formation of numerous shoals of a peculiarly stiff kind. After the necessary surveys, &c., he recommended a steam-dredging machine to be used: this was so successful when put into operation, that the water was considerably deepened, and no obstruction remained to the free passage of vessels of a certain draught of water. To maintain a uniform level of water, Mr. Rhodes then erected this waste-board, which works by means of balance weights in a very ingenious manner; when the water exceeds the proper height, these act, and allow the superfluous water to escape.—*Railway Magazine.*

DAMPIERE'S PATENT GEOMETRIC BALANCE, AND LETTER WEIGHT.

This weighing-machine is a very great improvement on any thing of the kind yet produced. It instantly denotes the weight applied to it, without calculation or adjustment; and requiring one weight only, its simplicity is perfect. Being founded on a principle purely mathematical, it is equally well adapted for weighing the most minute as well as the heaviest articles; its accuracy in every instance being undeviating. It acts, moreover, independently of any spring or machinery, and is therefore available in all climates, and proof against all changes of the atmosphere. For domestic uses,—such as keeping a check upon the butcher, baker, &c.; also for ship-owners, and mercantile men of every class, it is specially adapted. It may form also an ornamental appendage for the library and drawing-room table, for it is the most elegant of all the LETTER-WEIGHTS hitherto manufactured. Its portability and economical cost render it every way a desideratum. The sole agent for its sale is Mr. J. G. Huës, 168, Strand.

SCIENTIFIC MEMORANDA, AND NOTES ON ART.

MR. TALBOT'S PHOTOGEMIC DRAWINGS.

(Translated from the *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences, Paris.*)

At the sitting of the Academy of Sciences, in Paris, on the 23d March, M. Biot presented forty of Mr. Talbot's photogenic drawings, some of them obtained by application, and others by the action of

the camera obscura. The execution of these drawings was considered by M. Biot to be at least equal to any of the same kind previously produced. The following are the remarks of M. Biot on this subject:—

"The neatness and fineness of photogenic drawings cannot be expected to equal those of metallic plates. The clammy texture of the paper, its superficial asperities, the depth of the imbibition, and the capillary communication between the different parts of its surface, are so many obstacles, both to the absolute preciseness of linear delineation, and to the perfect development of the tints in the camera obscura. But in cases where the delicate touches of art are not required, as in taking copies of rare manuscripts, and charts of voyages they will prove quite satisfactory, especially, offering as do those of Mr. Talbot, the means of taking several copies at once of an original drawing.

"Trials are at present making to fix Daguerreotypes, which I trust will meet with a favorable reception, but whoever has studied the combination of physical conditions from which these admirable figures result, will think it very difficult, I am far from saying impossible, to fix them, without destroying or at least very much altering the causes which produce their charm.

"The utility of sensitive paper for copying manuscripts, was a natural consequence of the neatness of the copies of engravings which Mr. Talbot had already obtained by application, and which have been presented to the Academy. Mr. Talbot has also presented the following specimens of this special application, viz. a Hebrew Psalm, a Persian newspaper, and an old Latin chart of 1729. The members of the Academy of Literature, to whom I presented these proofs, have been pleased to remark the correctness and neatness of the impression, which renders them as legible as the original text. Nevertheless, there is another improvement to be made. These copies have been obtained by application; we should endeavor to obtain them by immediate radiation in the camera obscura. This is the only means of extending the process to the papyrus and other opaque manuscripts, or those which are too imperfectly transparent for the transmission of sufficient light; besides, the application of leaves is very difficult when bound into volumes.

"But this important extension of the process still requires several improvements, towards which the experimentalists should direct their attention. The most important is the increasing, as much as possible, the sensitiveness of the paper, in order to prevent the action of immediate radiation from being altered by the capillary communication of its different parts. I am of opinion, it is especially to this kind of communication that the fact observed by Mr. Talbot is to be attributed, viz.—that according to experiments made by application, it is more difficult to produce neatly a black lace fixed on a white ground, than a white lace on a black ground. But another and more general difficulty seems to proceed from the unequal power of radiation of the different substances, or perhaps from their disposition of physically altering the rays of light; for instance, in copying by radiation, in the camera obscura, a picture painted on canvas, wood, or porcelain, the several coloring substances used by the painter have been laid and distributed, so that each of them might absorb a certain portion of the total incidental light, and principally reflect toward the eye those complementary portions in which the tint will produce is predominant; but the chemical radiation which the same parts of the picture received, and reflect, is distinct from the light as it appears to the eye. In order that the chemical effect which it produces on sensitive paper, or on M. Daguerre's iodine coating, should present in light or in shade the equivalent of the colored shades, the reflected radiation must be chemically active, and the energy of its action must be proportional to the intensity of illumination presented to the eye by that portion of luminous radiation reflected from the same point of the picture. This last effect is not likely to be obtained in the same degree, by all the different coloring matters,

which produce the same effect on the eye, and which the artist might have substituted for each other in his work. Substances of the same tint may offer, in the quantity or the nature of the invisible radiation they reflect, so many diversities, or diversities of the same order, as the substances of different tints offer, relatively to light; or, on the contrary, they may be similar in their power of reflecting chemical radiations, though dissimilar to the sight, so that the difference of the tints which they exhibit in the picture made for the sight, would disappear in the chemical picture, and be there mingled in one uniform tint of light and shadow. These are difficulties generally inherent in the formation of chemical pictures, and they are a positive proof of the delusion of those experimentalists who expected not only to produce the intensity of light and shade in chemical impressions by radiation, but even the colors of the objects from which the radiation emanated. This phenomenon seems to be well worth studying, not only for the photogenic art, but for science itself. Doubtless, there are some traces of color in Daguerre's figures of natural objects and colored pictures, but they are very evident in Mr. Talbot's actual specimens. These specimens represent white porcelain vases, colored shells, a metal candlestick with a wax candle, and a stalk of white hyacinth: the ensemble of these objects is preserved in their chemical appearance, but the brightness of those parts which reflect white light is exaggerated, which seems to result from the capillary communication during the action, so that this inequality would very likely decrease if the paper was more sensitive, or more rapidly impressible. A feeble delineation only of the stalk and green leaves of the hyacinth have been produced, and principally in those parts of the outline of the stalk where a more or less perfect specular reflection operated. The points of the metallic candlestick where that reflection took place, are produced by white spots, which by their disproportion destroy the effect of the whole. This is particularly to be remarked in a copy of a picture by Corregio, of which the frame is distinctly produced, while the figure painted on the canvas is hardly perceptible."

After commenting at some length on the difficulties to be surmounted to bring this invention to perfection, M. Biot concludes as follows:—

"However, not to appear hopeless for the future, I will add, that the complement of success, would consist in the discovery of a quickly impresible substance, which could be adapted on papyrusaceous leaves, without penetrating deeply into them, and which, after the operation, could be fixed to them, as in Mr. Talbot's specimens. It would not be required that the first proof so obtained should produce the lights and shades in their real places, provided that the transparency and firmness of the prepared paper be such as to permit the taking of copies from it by application, in which the inversion could be rectified. Perhaps the division of the process into two operations would be the best means of resolving it."

FIXING PHOTOGEMIC DRAWINGS ON METAL.

In answer to a quotation in the preceding communication, relative to the little chance of success in fixing photogenic figures on metal, M. Arago remarked, "that the result of these experiments, though of a very recent date, were far from being discouraging, and that a specimen presented by M. Fizeau offered a new improvement. In the specimens formerly presented to the Academy, the drawings, though preserving their fineness, seemed to have lost their brightness; this is not the case with M. Fizeau's specimens, which are equal in brightness to the finest Daguerreotype, and which have acquired, through the operation of fixing, sufficient solidity to be preserved without any other precautions than those required for the preservation of common drawings. M. Fizeau states that the operation to which he submits the photogenic figures, is far from rendering them more faint; on the contrary, the effect of it is to increase the depth of the shadows, and the brilliancy of the lights."

VARIETIES.

British Cotton Trade.—In our cotton trade, there are about twenty millions of fixed, and twenty millions of floating capital invested. The total yearly produce of the manufacture amounts to forty millions. One million five hundred thousand persons earn their bread by it.—*Burton.*

The survey undertaken by the American Government, of the coast of the United States, the progress of which we have from time to time recorded, is still going on with zeal and spirit, under the able direction of Mr. Hassler. According to the official report, the survey of the whole coast and adjoining country, from the New Jersey shore of Raritan Bay, Sandy Hook, and Shrewsbury, to the waters of the Eastern States, is now completed. A map of the bay and port of New York is to be the first published, and is in active preparation.

Scientific Fraud.—The *Times* cautions brass-founders against buying, as copper, iron nails washed with a solution of sulphuric acid and copper, which gives them the appearance of the latter.

New Manufactures.—A new use of the aloe plant has been discovered in the beautiful tissue and cordage manufactured from its fibres, by M. Pairy, of Paris. The fibres of the palm and banana trees are also wrought by him into glossy stuffs.

Experiment in Bread Making.—Some very important experiments have been going on in Paris for some days past, in the presence of the Syndics of the corporation of bakers, and a commission named by the government, on the preparation of bread. By a new discovery, the quantity of flour which in the ordinary process yields only 102 loaves, is now made to yield 122 to 127. The discovery consists in the mode of fermentation. The bread, which is the same weight as in the common mode of panification, loaf for loaf, is equally nutritive, and is superior in flavor. I have tested some of it, and can therefore confirm this part of the statement. This is, indeed, a very important discovery in the present high price of bread, and secures a provision for a large increase of population. If generally adopted, it will render the application of the Malthusian doctrines unnecessary for at least a quarter of a century, and in the mean time some other discovery may be made which will prevent the abrogation of the great ordinance "increase and multiply."—*From a Correspondent.*

Products of the Irish Loom.—We have been favored with the inspection of some of the most beautiful products of the Irish loom which probably ever proceeded from it. They are from the Ardogné damask manufactory; and, in particular, some table-cloths of large dimensions, made to the order of Adriau Hope, Esq., Carlton-gardens, are, both in fabric and design, the most sumptuous, yet elegant things of the kind we have ever seen. In the centre is the crest, with the motto, *At spes infusa*, surrounded with a wreath of laurel; whilst round the border runs a broad, rich scroll, elaborate yet tasteful as the choicest Arabesque. The texture of these cloths is fine as satin, and yet their substance argues an almost never-ending durability. They are a proud triumph of the loom, and far surpass any fabrics for the same purpose that have fallen under our notice, either of foreign or domestic manufacture.—*Atlas.*

Chromatic Fire Cloud.—We witnessed the exhibition of this beautiful experiment on Thursday last, in the lecture-room of the Polytechnic Institution, in the presence of an immense assemblage. The display was conducted by Mr. E. M. Clarke, in person, and the effect was most splendid. We beheld the ceiling of the lecture room covered with terrific sheets and billows of flame playing in every direction, developing all the brilliant tints of the rainbow. We observed one very remarkable fact: as the waves of fire rolled about, the colored light which predominated at the top of each, was a rich crimson, but the bottom or hollow between two waves was a green. These two colors are comple-

mentary, or (in less scientific language), if combined, would form white light. The sides of the fiery waves, and the undulating surfaces between the top and bottom, exhibited all the remaining colors in their brightest glow. This novel pyrotechnic display now forms the most attractive feature among the scientific exhibitions at the Polytechnic Institution, where alone it can be seen. No less than 3,600 persons viewed it on Monday last. The composition, it is said, contains ether and a variety of coloring combustible ingredients in solution; but it is prepared by a chemical process, which is yet kept a secret. Several attempts have been made to imitate the beautiful effects exhibited by Mr. Clarke, but we understand that none have succeeded.—*Post.*

French Voyage of Discovery.—The *Artemise* frigate, commanded by Captain Laplace, whose arrival in the roads of Lorient, from the South Seas, we have announced, has been pursuing her voyage of discovery for four years, during which many privations were experienced, many dangers were endured, and several of the crew died; much astonishment has been excited at seeing her return in so good a state. The officers bring with them a large collection of shells, birds, and other rare and curious objects, from Cochin-china and the Pacific Ocean. Several cases containing vegetables and young plants of tea have been placed provisionally in the conservatories of the Maritime Prefecture at Lorient.

Public Libraries in London.—The valuable library belonging to the London clergy, at Sion College, London-wall, which is but little known to the public, is open to any person for the purpose of study on the recommendation of any incumbent in London. It contains upwards of 30,000 volumes, the collection of works in Biblical literature being very valuable, whilst it is also very rich in all the solid departments of literature. The Congregational Library in Redcross-street, Cripplegate, founded by W. Williams, for the use of Protestant Dissenting Ministers, contains upwards of 18,000 works, and is accessible to any person procuring orders from the trustees on Tuesdays, Wednesdays, Thursdays, and Fridays. The Congregational Library, also belonging to Protestant Dissenters, a secession from the former, consists of 6,000 volumes, and is likewise open for study under liberal restrictions. Archbishop Tenison's Library, in St. Martin's parish, designed by the founder for public advantage, is now under such a course of improvement, that a valuable collection of 6,000 volumes will soon be thrown open.

The Sallanches Conflagration.—The *Fédéral* of Geneva gives some further details of the calamitous conflagration at Sallanches:—"Limbs and other fragments of human bodies continue to be dug out of the ruins, but every moment walls are falling, so that it is extremely dangerous to come near them. A man was killed on the 21st inst. by the coming down of a chimney. The powder-magazine is burnt down to the vault which covers the powder, and none dares to approach it. The aggregate loss is estimated at 10,000,000f., and the assurances effected do not amount to more than 80,000f., of which 75,000f. are upon the Hotel de Ville, the establishment of the Frères Ignorantins, and other public buildings, leaving only 5,000f. for the private houses, which were 250 in number. The suffering people are in want of bread, and have great difficulty in procuring any kind of food."

Another account says:—"In one house has been found a woman and six children half consumed. In another, a man with a child in his arms; and in several more, single bodies. An angle of one of the walls of the minister's house fell, and killed three persons. Such was the intensity of the fire, that not only was the church entirely destroyed, but the bells were partly melted. Everything is consumed, and it was in attempting to save some part of their property that most of those persons who have perished met their fate. The late inhabitants of Sallanches have become wanderers without homes,

clothing, or food. The residents in the neighboring villages have rendered them some succor, but are far from being able to supply all their wants."

The Burning Mines of Commentry.—The great conflagration in these extensive coal beds has not been extinguished; but such a mastery having been at length obtained over the consuming element, as renders the catastrophe no longer doubtful, the mayor of that commune has addressed a letter to one of the Paris journals, in which he seeks to communicate more precise opinions, as well of the extent of the calamity as of the cause in which it originated. "The mines of Commentry," he observes, "are worked at once subterraneously and beneath the open sky. Of late years, this second mode has been preferred. A seam extending to 80,000 cubic metres had recently been exposed, and was about to be carried off, without any apprehension of the fire, which, in fact, has existed in these mines during the last four-and-twenty years, but the seat of whose action was at some distance from the mass in question, and was besides confined by important works of art. No danger seemed to present itself in that direction; yet an active and unceasing watch was maintained night and day. All possible precautions had thus been regularly taken. On the 15th of March last, a huge fall of earth, which no vigilance could foresee, suddenly occurred, throwing down the barriers established, and driving their guardians before it. The director of the mines immediately descended into the works, caused the safety-gates to be closed, and endeavored to bar all access to the air. But the fire bursting through every obstacle, spread with instantaneous and devouring force over the great coal seam, which was soon in full combustion. The civil and military authorities were immediately on the spot, and rivalled each other in zeal and activity. They were accompanied by the engineers of the roads and bridges, and those of the mines, who declared that a great and continuous body of falling water was the only power capable of subduing the conflagration. But the river flowed 38 metres beneath the coal-field. A minute survey of the ground was, however, made; and established the possibility of turning the course of a tributary stream, which flowed at a distance of 4,300 metres. The work was instantly commenced; the ground-formations for the bed of the deviation occupied forty-eight hours; and twice that interval of time sufficed to execute and arrange in their places certain wooden conduits, destined to traverse several intervening hollows. At length the waters so impatiently expected, arrived, pouring into the burning mine 2,000 cubic metres of water per day. At the present moment, all the subterranean works are under water; and since the commencement of this month a system of irrigation has been established on the burning mass, which has produced the happiest effects. Hopes are entertained that, in time, not only will the immediate conflagration be extinguished, but that also which has been in operation for 24 years past.

**SCIENTIFIC MEETINGS IN LONDON,
FOR THE WEEK COMMENCING MAY 4TH, 1840.**

Monday.	Entomological Society.....	8 P. M.
	British Architects (anniv.)	3 P. M.
	United Service Institution....	9 P. M.
Tuesday.	Linnæan Society.....	8 P. M.
	Horticultural Society	3 P. M.
	Electrical Society.....	8 P. M.
	Uranian Society.....	8 P. M.
Wednesday.	Society of Arts.....	7 P. M.
Thursday.	Royal Society.....	8 P. M.
	Society of Antiquaries.....	8 P. M.
	Zoological Society.....	3 P. M.
	Royal Astronomical Society..	8 P. M.
	Royal Institution.....	8 P. M.
	Royal Asiatic Society (anniv.)	1 P. M.
	Mathematical Society.....	8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

LINNÆAN SOCIETY.

April 24. *The President's Soirée.*

The Bishop of Norwich, President of the Linnaean Society, gave his first soiree at his residence in Lower Brook-street. Among the distinguished scientific company were, the Marquis of Northampton, Bishop of Hereford, Sir Jas. Heywood, Dr. Robert Brown, Messrs. Schomburgk, Yarrell, Bell, D. Don, E. Foster, Bennett, Bentham, R. H. Solly, Menzies, &c. &c. On the table were some very beautiful Electrotypes from Mr. Newman.

Among other curiosities which attracted attention, were some flowers formed entirely of portions of feathers, executed by Mrs. Randolph. Although this beautiful and delicate art is well understood in South America, and has even been in the progress of execution in this country by Mrs. R. for eight or nine years, yet it is only within the last few months that the greatest degree of perfection has been arrived at, and the public have now the opportunity of judging by the skill, judgment, and taste evinced by the artist, to what extent nature assists art in the approximation to perfection in forming representatives of vegetables (and these of the most perfect kind) from judicious and well-selected portions of the feathered tribes. The various tints of the petals and leaves are not produced by paint, but by fixing the feather, or portion of the feather, on the requisite colored ground.

Specimens of Camellia, Myrtle, Chrysanthemum, Roses, Carnations, Adonis, &c., were exhibited, and excited the notice, attention, and commendation of the various lovers of nature.

MICROSCOPICAL SOCIETY.

April 22d. Professor Owen, President, in the Chair.

(Continuation of Last Week's report.)

A paper was read by Mr. Bowerbank "On some new forms of fossil vascular tissue." The first form which Mr. B. described, was a reticulated vessel, occurring in a silicified dicotyledinous wood from Antigua, unlike any recent form of tissue with which the author is acquainted. The vessels are divided into compartments, whose length rarely exceeds four or five times their breadth, the compartments being separated from each other by a partial diaphragm, which contracts the vessel at the part where they occur as much as half or two-thirds of the whole diameter, but does not entirely cut off the communication between the compartment. The inner edge of the diaphragm is furnished with a thickened membranous hoop or ring. The walls of the vessel are composed of a beautiful regular reticulated membrane. The network is formed not of an uniform membranous tissue, such as we usually observe on the walls of the vascular tissue in recent plants, but, on the contrary, the membranous coat or network is filled with innumerable small vascular cavities, irregular in their shape, and infinitely smaller than any of the cellular structures observable in other portions of the specimen. The diameter of one of the largest does not exceed 1.15151 part of an inch, while the smallest of the woody cells was 1.1111 of an inch in diameter. The interstices of the net-work appear to be closed by a pellucid membrane, but Mr. B. could not observe anything that could induce him to believe that they had been occupied by the minute discs which are found upon the surface of the vascular tissues of coniferous and other woods; possibly this may have been the case. Mr. B., however, does not think it probable, as he frequently found these areas running two or three together, while the structure is in so perfect a state of preservation as to lead him to state that this is not the effect of partial decomposition of the tissue, but, on the contrary, that it is a natural arrangement of the parts. The average breadth of the thread of the net-work is the 1.9845th of an inch. The average breadth of the interstices is the

1.4348th of an inch, and their average length the 1.2380th of an inch, so that the exceeding minuteness of this tissue may be conceived. The average diameter of the vessels is the 1.180th of an inch.

The second form of tissue which Mr. Bowerbank described was found in a specimen of silicified wood, presented to him by Mr. Newman, who does not know from whence it was obtained. The vessels are divided into compartments, whose length rarely exceeds two or three times their breadth, and is frequently even less than their own diameters, and when in good preservation are uniformly covered with a fine net-work. The fibre of the net-work is a simple membranous thread, without any appearance of vesicular cavities. The interstices of the net-work appear to be closed by a simple membrane, but in one case Mr. B. detected in one of them a single discoid organ, similar to those in conifers, but it was so indistinct that its form could not be very certainly determined. From this indication, it is probable that in a perfect state of preservation, the whole of these interstices might have been furnished with such organs. The nearest recent type of this singular vessel occurs in the wood of *Ephedra*.

The third form of tissue described by Mr. Bowerbank occurred in a specimen of fossil palm, supposed to have come from Antigua. The peculiarity of this tissue is found in the sheaths of the small cylindrical bundles of vessels. When a transverse section of one of these bundles is made, the sheath enclosing the bundle of small vessels is seen to be lined by a single layer of large globular vesicles of the 1.1000th of an inch in diameter, and which indistinctly appear to be reticulated. When a longitudinal section is examined, the vesicles are rarely so close as to touch each other, there being generally a space intervening equal to about half their own diameter: and they are disposed within the sheath in a manner rather approaching to series of parallel lines.

The fibre of the net work is a simple, somewhat gibbous tissue, and the interstices have the appearance of being closed by a thin pellucid membrane.

The fourth and last form described by Mr. Bowerbank occurs in a fossil dicotyledinous wood, said to be from Antigua. The whole of the surfaces of the large vessels, are coarsely and very irregularly reticulated. The fibre of the net-work is filiform and opaque, and unlike any form Mr. B. has observed, either in recent or fossil plants. The interstices are irregular, and no discoid organs, or any indication of them, could be detected. The diameter of the fibre of the reticulated structure was unequal, and its edges ragged and irregular, and much resembled, with this high power (800 linear), a dendritical filament; whether this structure is natural to the thread, or the result of decomposition, it is difficult to determine. The structure, however, in the whole of the vessels, is almost uniformly in the same condition, which could scarcely have been the case had the singularly irregular form of the thread been due to partial decomposition.

Specimens of the above new forms of vascular tissues were exhibited under the microscope by Mr. Bowerbank. The paper was illustrated by a series of drawings and diagrams.

URANIAN SOCIETY.

April 7th. W. H. White, Esq., Vice-President, in the Chair.

A paper "On Motion considered as an attribute of matter" was read by the Secretary, Mr. J. M. Cavalier, of which the following is an abstract:-

Motion, whether considered in relation to the vast spheres that gem infinity, or as connected with those minute particles that are excited by the powerful magnet through the porosity of the thickest glass, seems to be a concentration of power, diversified in every possible form and size of material atoms. The light gases, in the excitation of which consists atmospheric electricity, have each their

peculiar modification of inherent motion; by the varied nature of their primary elements, they produce that action and reaction on each other which is so grandly manifested in the terrific storm. The fact of the heterogeneousness of matter, or the existence of primitive and constant elements of opposite qualities, presents us at once with the idea of a motive power in matter *per se*, for it is evident that these constant elements being of opposite qualities, must perpetually act and react on each other, causing action and reaction, the oscillation of which constitutes motion—the soul of the universe.

In all cases where "rest" is apparent, it is owing either to the motion of a secondary being in an opposite direction to that of its primary, on the surface of which it is moving, or that the secondary partakes of the motion of the primary—it matters not which—they are both in motion: the rock on the surface of the earth, constant as it may be to its local point, is, by virtue of the earth's motion, as in the instance alluded to,—they are, both secondaries; one having an opposite motion of its own, the other a motion with its superior: the effects produced in both cases are states of relative rest—hence, what is called rest is but a mere modification of motion.

Motion is generally considered in a mechanical point of view only, in consequence of its immediate connection with the science of mechanics.

In mechanics, a system of perpetual motion has been all but produced, which has failed, in consequence of its being impracticable to overcome the friction of resistance; but this cessation of mechanical motion does not in the least prove that perpetual motion is an impossibility, but merely that the production thereof by artificial means cannot be obtained.

In nature, however, we find that the very resistances which cause certain modifications of motion to dissolve, give birth to a new series, and thus a compensation takes place, which causes a continuance of motion in bodies not in *vacuo*.

In the stellar regions, we perceive instances of perpetual motion, both in the binary system of suns and in the nebular phenomena; in the former, we find two suns having a tendency to perform orbicular revolutions around each other, which tendency, by the laws of nature, becomes modified into a motion of both in one common orbit, around one common centre: in the latter we observe an inherent motion of rotation going on, which tends to condense its gaseous nebulousity and adapt it for the production of a *système planétaire*—this is beautifully exemplified, if we view the various states of nebulae from that of Orion to the *Præsepe Cancri*, which plainly shews that the very germ of planetary creation is an innate principle of nebulous masses.

Motion must be either an inherent property of matter, or an immaterial power emanating from an immaterial cause; the latter consideration appears on its very face too absurd to entertain, since we know from experience, that it is from the action of mass upon mass, that motion obtains; hence it becomes impossible for a supposed immateriality to exert any force upon matter.

Wherever we direct our attention, we perceive phenomena and existences, the primary principles and radical essences or elements of which, ever elude our detection; our very conceptions are alike confused, whether they be fixed on substance or its attributes; each of these become subjects of overwhelming wonder to the faint gleam of intelligence.

But even with our limited powers of perception we discover, if we but act in obedience to the law of nature, and view her not in connection with supposed "spiritual existences," that she is a kaleidoscope of an infinite series, in which

"All forms that perish, other form supply."

* Suppose a body placed on a moveable slide—the slide moving from right to left, and the body thereon from left to right, both with equal velocity; it follows that the secondary body, in consequence of the equal motion of the slide compensating its contrary motion, will be constant to that point from which the slide commenced its motion.

THE THEATRES.

" See that the players be well used."—*Hamlet*.
 " Nothing extenuate, nor aught set down in malice."—*Othello*.

The Easter novelties are, of course, the principal attractions at the present moment; the regular drama being greatly at a discount. The favorable change in the weather too, militates in no small degree against full houses; still the managers persevere, though, we fear, at almost a ruinous loss to themselves.

HER MAJESTY'S THEATRE.—Giulia Grisi reappeared here on Saturday night, as *Elvira*—a part peculiarly her own—in *BELLINI's opera, Puritani*, and she was welcomed with the warmest applause from every part of the theatre. She appeared in excellent spirits, and sang with all the freshness and sweetness which have secured her so many, and such ardent admirers. To say any thing in her favor, would be like gilding refined gold, or adding a new perfume to the violet; yet still we think, if any thing, her voice, since we last heard her, has gained something of fullness and mellow richness of quality. Her personification of a mind overwhelmed by sudden calamity—passing from scenes of most exquisite bliss down to "severest woe"—from the giddy height of youthful gaiety down to the dark depths of despair and insanity—was a masterpiece of acting—a stroke of genius that has added another wreath to her well-earned fame, and she received that silent but most eloquent of all applause—tears. The characters of the opera are cast as formerly, save and except the part of *TAMBURINI*, in whose place is substituted Signor COLETTI, a young performer, whose first appearance was rendered doubly severe as coming after so great a "star." When he made his appearance in the first act of the opera, a few voices cried out for "TAMBURINI!" with a friendly zeal to create a disturbance, but the more sensible part of the audience were against such an attempt, and almost general applause hailed him on his entrance. His exertions were such that they commanded cordial and almost unanimous applause. This gentleman has much to learn and unlearn in both the vocal and acting departments of his art; but though we cannot pronounce him a first-rate artiste, he is worthy of holding a distinguished place in any theatre in Europe.

RUBINI executed "Ella e tremente," with great energy and incomparable feeling. LABLACHE also acquitted himself nobly. The opera passed off triumphantly, and at the fall of the curtain GRIER, RUBINI, and LABLACHE came forward, hand in hand, and were rewarded with long continued applause. This was followed by the ballet *Les Deux Pages du Duc de Vendome*, the performance of which presented nothing remarkable. Fanny ELSSLER's place is to be supplied by a Mlle. CERRIO, a celebrated Italian *dansuse*, in whose praise the foreign journals are eloquent. The house was crowded by a fashionable and aristocratic assembly, amongst whom were her MAJESTY, PRINCE ALBERT and the QUEEN Dowager. The same opera was repeated on Tuesday, with increased effect.

COVENT GARDEN.—The management have been trying a number of experiments, in the revival of old comedies and popular plays: but none of them promise to be so attractive as the opera of *Love in a Village*, reproduced on Tuesday. The cast of this is excellent. We have FARREN as the representative of *Justice Woodcock*, an unctuous embodiment of the silly old fool of a magistrate; KEELEY, the cunning clod-hopper, *Hodge*, a piece of true nature most artistically depicted; and FRAZER, as *Young Meadows*. This gentleman really does improve, though we deemed him incapable of improvement. We acknowledge our error. Many of his songs were given with a delicacy of expression, and a degree of feeling, that won greatly on his audience. Rosetta was assigned to Miss RAINFORTH, who warbled her portion of the music delightfully, and made us wish ourselves a *Hawthorn* for her sake. We could in-

deed have loved her truly,—very truly. HARRISON who assumed the character, save his usual awkwardness of gait, was in very good voice; but what on earth does he mean by introducing so much ornament—save the mark! into the beautiful ballad of *The Thorn*? It makes us suspect he is more fond of voice than he is of soul; at all events, it shows he has a very questionable taste. Beyond these, we need only notice *Deborah Woodcock*, sustained with the true *ris comicis* by that greenest of evergreens, Mrs. C. JONES. This lady is one of the genuine old school, whose acting is refreshing in these degenerate days of the drama.

Murphy's comedy of *Know your own mind*, has been acted once or twice, but it does not draw. This we are not surprised at. It is very similar in its nature to the *School for Scandal*, but lacks much of the body of that admirable comedy. *As you Like it*, with Miss Ellen Tree as *Rosalind*, has also been produced, but it does not appear to excite much attention.

THE PRINCE'S THEATRE.—This theatre, lately known as the St. James's, opened on Monday with the "German Opera Company;" under the direction and joint management of BUNN and Herr SCHUMANN.

The house appears to be entirely remodelled,—the whole of the dress circle having been converted into private boxes. On the right, one appears to have been arranged with peculiar care, as if for the reception of Royalty. The pit has, as a substitute for stalls, three rows of chairs. The company and the orchestra are all Germans,—the latter consists of thirty-two musicians.

The business of the evening commenced with *Der Freischütz*, with Mad. Fischer SCHWARZBACH as *Agatha*, Herr SCHEMEEZER, *Max*, and Herr PECK, *Caspar*.

The first of these is a lady of a very pleasing appearance, and of a light and graceful figure, although she cannot be considered handsome. She has a rich and melodious voice, but wants vivacity and facility of execution. She is evidently a complete musician, and is endowed with an intensity of feeling and a simplicity of style that make up for her want of liveliness. She was throughout considerably applauded. Herr SCHEMEEZER possesses a fine voice; it is a rich and powerful tenor. His style of singing is simple and expressive, and his manner of acting, energetic and fervent. His *chef-d'œuvre* of the night was in the first act,—commencing in the English version "*O I can bear my fate no longer;*" the execution was masterly. Herr PECK personated *Caspar* with an energy that rather bordered on excess; but in the famous drinking song, his representation of reckless and desperate jollity was admirable. The rest of the *dramatis personae* appear to be artistes of respectable talent. The scenery of the piece was vile, and reflects great discredit on the manager.

Why was that comic *pas de deux*, or more correctly speaking, a hornpipe in fettters, introduced in the third act, in the midst of Weber's beautiful music? It is a vulgar piece of buffoonery, and well worthy of the "acting manager," whose bad taste in these matters is proverbial. The German manager, we are sure, would never have permitted this egregious piece of folly, had he not been overruled by this his "Evil Genius."

The incantation scene was so very bad, and so niggardly in its appointments, that it was hissed from beginning to end. Economy is all very well, but such economy is disgraceful. Touching the music, we never heard the "Hunters' Chorus" sung to greater advantage—it was twice encored. The chorus singers, instead of being, as they usually are, a set of merely mechanical bawling beings, entered heart and soul into the business of the scene. The result was, of course, perfect harmony. In justice to the orchestra—although, as Englishmen, we cannot help wishing that some at least of our own native artistes had been engaged—we must say their performance was characterised by true delicacy of style and the greatest regularity and precision. We discovered, in their execution, many

beauties that had hitherto escaped our observation. The theatre was so crowded, that it was with great difficulty we could obtain a seat.

ENGLISH OPERA.—It gives us sincere pleasure to announce the re-opening of this establishment last evening, for the summer season, with the celebrated *Promenade Concerts*. The band consists of first-rate performers, native and foreign, including, amongst the solo performers, Messrs. Harper, Platt, Hatton, G. Cooke, Baumann, Richardson, Lazarus, Laurent, jun., and the celebrated flageolet player from Paris, Monsieur Collinet. Signor Negri is the conductor, and Monsieur Laurent, son., is the acting manager. Baumann played a solo last evening, and his part in the favorite selection from *Robert Le Diable*. Collinet and Laurent, jun., are engaged, and will perform the solos in the quadrilles and waltzes, on the flageolet and cornet-a-pistons.

OLYMPIC.—Mark LEMON has produced a very smart little burletta, as a companion or sequel to his *Ladies' Club*, entitled *The House of Ladies*. They are seen prospectively, the scene of action being laid in 1843. Mrs. STIRLING is of course the presiding divinity in the chair, and her oratory is such, that we must beg all our readers to go and hear it. The piece is very lively and well acted, and will have a run.

ASTLEY'S.—DUCROW and WEST appear to be possessed of the "Philosopher's stone," for all they touch is converted into gold—or silver. The two, united, cause an overflow in the treasury that gladdens the heart of the managers not a little, as they contemplate their weekly gains. The entertainments here continue highly popular,—the scenes in the circle being varied continually, and new entertainments provided of the most "gorgeous" (Ducrow's fondest expression) kind. We never could account for it, but here, even in the most sultry weather, the house is generally filled to the slips. On such occasions, however, to speak truth, we always slip out!

The "MINORS" are all "as per last,"—the Easter novelties having had a successful run.

The popular author and illustrator of the "Nero Melodies," will "Jump Jim Crow" on the deck of the *Samson* packet on Monday next; wheeling his course, wind and weather permitting, towards America; being his second flight from the mother country, where he has picked up a plum that he is about to divide among his "Rookery" in other climes. The moment his multifarious engagements are completed, he promises to return richly laden with a variety of new and popular melodies. It is something for this actor to be able to say, that he is the only American actor that has perfectly succeeded in England.

BRUSSELS.—First representation of *Regine*, a Comic Opera, in two acts; the words by M. Scribe, the music by M. A. Adam.—There is no author that we know of, who possesses, like M. Scribe, the art of being ingeniously absurd. Take the pieces that he has produced, either at the regular operas, or at the minor theatres, one by one, and read them with a view to submit them to serious examination. Not one will stand the test. And yet, when you are present at the representation of these same pieces, you are struck with a number of excellences, which, in the analysis of them, they were proved not to possess. The skill of M. Scribe, and it is great accomplishment, consists in making the spectator unconscious of his defects. Every thing is false about his pieces, from the opening scene to the denouement. Whilst other dramatic writers exhaust themselves in endeavoring to give their plots a regular chain of occurrences, he does not hesitate to adopt the most improbable incidents, provided he sees the possibility of making them received by the public, with the assistance of those artifices which are peculiar to him. He acts to the letter upon this axiom "the theatre exists by actions;" and he creates, at will, all kinds of things,

without true character or reality. If he treated in this manner the creations of fancy alone, it might be more excusable; but history is made to subserve the exigencies of this system, which is become invariable with him. It is difficult, after all, to blame him for it, for he can advance the best argument in its favor—success. Even we, who perceive these defects, and denounce them, allow ourselves to be captivated, like the rest of the world, by the snares which he spreads to gain the approbation of the public. The piece of *Regine*, which we are about to describe, comprises many impossible situations, or rather it is altogether an impossibility; but nevertheless it excites in representation a degree of interest.

In the first act, the scene is laid at Dunkirk, during the republic. Mademoiselle *Regine* de Volberg is represented in the first scene as involved in troubles. Her brother, the Duke de Volberg, one of the Royalist chiefs in La Vendée, is expected to arrive that evening to endeavor to embark on board an English ship cruising in the offing. All her preparations for his reception are completed, when an accident occurs to disarrange them. M. Sauvageon, the Mayor of Dunkirk, is desirous of giving a fête to the representative of the people, who is sent to arouse the patriotism of the northern provinces. The salons of the municipality not being sufficiently large to carry this design into effect, he sends to Mademoiselle de Volberg, that is to say, to the citizen *Regine*, to ask permission to use her house for the occasion, as it is the most beautiful in the neighborhood. This M. Sauvageon is not a fierce republican; on the contrary, he is easily intimidated, and does not disguise the fact that he passes his life in constant dread. If he were capable of having an opinion of his own, he would regret the former order of things, but he has become a patriot from fear, and got himself placed at the head of the municipal administration. He is not evil disposed, and would not willingly injure any one. Nevertheless, he will not allow his personal safety to be compromised by his natural good-nature, for the first of these sentiments infallibly paralyses the effects of the second: thus, he himself declares, fear would make him cruel. Mademoiselle de Volberg endeavors to make him abandon the idea of receiving the citizen representative in her house; but as his object is to get in the good graces of a dangerous man, he is intractable. *Regine* is obliged, in order not to be classed as a suspected person, to do the honors of her house to the delegate of the committee of public safety. She is an orphan, and an aunt who took charge of her in infancy is an emigrant in Germany, where her family possess large estates; and *Regine* herself intends to emigrate as soon as she has secured the safety of her brother. Before going to the official ball, given for the purpose of exhibiting the patriotism of M. Sauvageon, she confides the secret to *Toinette*, her *femme de chambre*, that the Duke de Volberg will arrive that night, during the ball; that *Toinette* must introduce him silently, and give him his supper to gain patience. Scarcely has *Regine* made her exit, and *Toinette* has had time to sing some couplets, when a knock is heard at one of the doors of the apartment. A young man appears, dressed as a soldier, and asks for Mademoiselle *Regine* de Volberg. "It is he," says *Toinette* to herself, and without losing time to ask any questions, she shows him in, and places him in the chimney corner before a comfortable supper that she has prepared for his coming. Our soldier wishes to explain, but *Toinette* implores silence, blows out the candles for fear he should be seen from without, and runs to inform her mistress. It will be already understood that *Toinette* has made a blunder. The young soldier is not, as she supposed, the Duke de Volberg in disguise; he is in reality a trooper, who has arrived an hour ago at Dunkirk, to whom a billet to lodge in the house of Mademoiselle de Volberg has been given. Soldiers were not accustomed to meet with such a reception when they went to take up their quarters at a citizen's house. Our conscript is, therefore, delighted with his treatment.

He takes his seat before the supper, which has with the most delicate attention been prepared for him, and begins to devour with great zeal the wing of a fowl. Whilst he is proceeding with this agreeable exercise, *Regine*, informed of his arrival by the intelligent *Toinette*, goes on tip-toe to the room where our conscript is installed, and throws herself into his arms, believing that she is embracing her brother. *Roger*, for it is time to give our hero a name, endeavors to speak; the young girl puts her hand on his mouth, and tells him to be silent. She then departs promising to return soon. The adventure becomes more and more piquante. *Roger* is all in the dark as to what is going on, and abandoning himself to the charming illusion, he sings,

" Ma foi, si l'on m'attrape
Je demande aujourd'hui
Que d'étape, en étape,
On me conduise ainsi."

When the fowl has been devoured to the bones, *Toinette* returns. The saloon in which *Roger* has established his head quarters is wanted for a music room, and as he must quickly decamp, he hides himself in *Regine*'s bed-room. The room being then filled with company, M. Sauvageon entreats *Regine* to sing. She refuses, but he tells her that a refusal might be regarded as a proof of her dislike of the guests. *Regine* succumbs to such a good reason, and sings the "Adventures of a young and handsome Trumpeter." Whilst *Regine* is singing, a noise is heard from the chamber into which the soldier has retired, of some one falling over a piece of furniture. For the protection of the public morals, several of the guests break open the door, and out comes the conscript, not a little embarrassed. *Regine* seeing no other means of concealing her brother, tells M. Sauvageon that she is secretly married to the stranger; but then, discovering that the person whom she in the dark had mistaken for her brother, is really a stranger to her, she wishes to contradict herself. M. Sauvageon sees something suspicious in all this evasion, and having received information that a suspicious person of importance is concealed in the neighborhood, he determines that *Regine* and her husband, whether true or false, shall be locked up together. In order to complete *Regine*'s distress, *Toinette* announces to her that her brother, the Duke de Volberg, has arrived. The company retire, M. Sauvageon places two sentinels in the apartment, to prevent the escape of his prisoners, and the first act ends.

In the second act, the spectator is transported to Germany, to the chateau of the Countess of Lichtenstein, the aunt of Mademoiselle de Volberg. Many years have passed. *Toinette*, in talking to the Countess, relates what took place at Dunkirk. We are told that the Duke de Volberg escaped in an English fishing-boat, and that the people attacked *Regine*'s house, intending to kill her. *Roger*, in order to protect her, declared she was his wife, and his fellow-soldiers therupon assisted him, and drove back the populace. The delegate from the committee of public safety, however, was not satisfied, and insisted that the marriage ceremony should be repeated in his presence. That this was done, and that immediately after the marriage, *Roger* went away, and had not since been heard of. The pride of *Regine*'s aunt, who is a German baroness, is greatly shocked at the idea of her niece being the wife of the citizen *Roger*; and a report having reached them that a soldier named *Roger* had been killed, the Baroness persuades *Regine* that she may marry again, and she is obliged to accept the offer of no less a personage than the nephew of M. de Metternich. When all is prepared for the marriage, the French army arrives in the neighborhood, and a Colonel is sent to take possession of the Baroness's chateau. This Colonel turns out to be *Roger*, but still the Countess cannot reconcile herself to the marriage, and gets him to sign a divorce. Napoleon, however, confers a title of nobility on *Roger*, and M. Sauvageon is compelled, in order to save himself from the displeasure of the Emperor, whom he has by some means offended, to bestow a large portion of his wealth on the young soldier.

Regine tears to pieces the act of divorce, and *Roger* falls at the feet of his wife.

The music of M. Adam contains some pleasing passages, but there is little novelty in it. *Regine* is well got up at Brussels, and each of the actors is admirably adapted to his part. It is not their fault, that the second act of the opera was so extremely insipid.

ADVERTISEMENTS.

THE COLLEGE for CIVIL ENGINEERS will be formally opened on MONDAY NEXT the 4th May, under the presidency of His Grace the Duke of Buccleuch.

The company are requested to assemble punctually at Half-past One o'Clock.
Office, 53, Pall Mall.

J. E. B. CURTIS, Sec.

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1. To give, more particularly to youth who may be intended for the profession of the Civil Engineer, a theoretical and practical education in Civil Engineering, which education is fully adapted to qualify men for every situation in life.

2. To afford to the Working Engineer theoretical instruction applicable to practical knowledge.

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Prospectuses and every information may be had at the Office, 53, Pall Mall; of Richard Hunter, Esq., Doune Terrace, Edinburgh; of Dr. Traill, University of Edinburgh; and of R. Wallace, Blythswood Hill, Mathematical Academy, Glasgow.

By order of the Council,
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SATURDAY, MAY 9, 1840.

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COLLEGE OF CIVIL ENGINEERS.

The announcement of the opening of this admirable institution, whose interests have been repeatedly advocated in our columns, drew an immense assemblage on Monday last; amongst them were a goodly array of our lovely countrywomen—who seemed to enter spiritedly into the objects of the meeting—and a numerous attendance of the nobility and gentry. We observed present on the occasion:—the Dukes of Buccleugh, Richmond, and St. Albans; Earl of Devon; Lord Mayor of London; Sheriff Evans, Sheriff Wheelton, and their ladies; the Minister of the United States; Sir George Stephen, Bart.; Sir J. D. Paul, Bart., and lady; Rear Admiral Sir Lucius Curtis; H. A. Horneman, Esq., projector of the College; Vice Admiral Sir Richard Hussey Hussey; Major General M'Innes; Lieut.-Colonel Angelo; Colonel Bunbury; Colouel Landmann, R. E.; Captain Ogle, R.N.; Captain Leckie; Capt. Hill; Rev. J. Holmes; Rev. C. Driscoll; Rev. G. Preston; Rev. J. Grant; Rev. M. Seily; Rev. Dr. Hawtry, of Eton College; Meer Afzil Ali, Esq.; J. D. Hulton, Esq., of Southampton; John Loch, Esq.; J. G. Margary, Esq.; — Young, Esq.; — Dobrec, Esq.; Ewart Rowderkey, Esq.; Richard Green, Esq.; Bugwar, Row, Esq.; Eneas Mackintosh, Esq.; Dr. Andrews, M. D.; Dr. Ifil; Dr. Bernard; Mr. Alderman Gibbons; Ardasee Cursetjee, Esq.; J. Brunel, sen., Esq., C. E.; John Walter, Esq.; J. Vandeleur, Esq.; Nathaniel Ogle, Esq.; Delianson Clark, Esq.; Captain Pottinger, &c., &c.

The company were received by Major Hutchinson, the resident director; and after inspecting the different buildings of the college, attended divine service at the Kentish-town chapel. The following is a general outline of the institution:—

The college is founded to give to youth theoretical and practical instruction in civil engineering, on terms as moderate as the expenses attendant upon such a course of education will allow.

The principles upon which it is established, are liberal, public, and disinterested.

The course of instruction, as laid down in the

annexed plan, has been submitted to the most competent judges, who have given it their unqualified approbation.

With a view of raising a fund to meet the large outlay consequent upon the first establishment, peculiar advantages are offered to those who are willing to promote the undertaking by their contributions.

To the beneficent, an opportunity is afforded of placing the advantages of the institution at the disposal of those parents whose finances are unable to meet the necessary expences.

A graduated scale, enables the provident parent, by the payment of small instalments during infancy, to ensure the education of his son in accordance with the course laid down, and in case of death, and in other cases more particularly specified therin, to have the money he has advanced equitably returned.

As there may be many to whom the whole course would be unnecessary, but who may be desirous of studying certain branches, each branch of the course will be open to students under certain regulations. It may be observed, that the Honorable Court of Directors of the East India Company have passed an order that no person shall be admitted into the Indian navy unless perfectly conversant with the principles and management of steam engines, as connected with navigation. Those young men who may intend entering the above service, will find the arrangement specified in this clause peculiarly advantageous to them for acquiring the necessary qualification.

An evening class will also be opened, for the purpose of giving to the working engineer theoretical instruction, applicable to practical knowledge.

In the selection by the council of the several scientific and other masters, perfect competency for their respective duties, and irreproachable character, will be the chief objects attended to.

After the service at the chapel was ended, the whole congregation returned to Gordon House, Kentish-town, and assembled in one of the new school-rooms.

The Duke of Buccleugh, as president of the College, was unanimously called to the chair, and addressed the meeting. His Grace, in a very neat speech, congratulated the individuals assembled on the establishment of this college, and expressed his surprise that such an institution had not already been founded in a country of such wealth and intelligence, and where the necessity for its existence was felt so fully. Other countries had their colleges for the development of this peculiar branch of practical education; but in this country it had, hitherto,

only been taught in private houses, or by individuals receiving pupils. However, he hoped from the great interest which he saw taken in the present institution, and from the zeal and ability which characterised the individuals appointed to conduct it, that such a reproach would be speedily removed from our nation, and that the college they were now founding would speedily rank as high, and be found as valuable, as the best established institutions. (Applause.) He dwelt with high praise on the perseverance displayed by the council, and more particularly by Mr. H. A. Horneman, during their long and anxious consultations to meet and overcome all the difficulties incident upon a new undertaking of the kind, and felt convinced that now they might fairly expect to reap the happy reward of their labors in viewing the permanent prosperity of an institution so fully calculated to become an honor to the English. (Applause.) The pupils would be placed immediately under the care of an individual of the highest talent and domestic virtues—indeed all the professors had been selected with especial care to their high efficiency and exemplary character; and he felt convinced that no where could more care have been taken to found an institution on a better basis, as far as concerned the personal management of its proceedings. (Hear, hear, hear.) He felt considerable satisfaction in reflecting on the great public support it had already received in so short a space from its first starting, and reckoned amongst the most favorable omens, the co-operation of the chief magistrate of the city of London, and that of the sheriffs, who had done them the honor of attending that day. He had then only further to declare that the college was now open. (Long continued cheers.)

The Duke of Richmond said, as chairman of the council, it had become his duty to call their attention to the rules of the college. They sought no rivalry, but only wished to share the favor of doing good to their fellow-creatures—to improve the condition by the extension of education to all classes of society. (Hear, hear.) This college was founded on religion, and therefore they had the best security, both that it would do good in its operation, and that it was firmly and securely based. (Hear, hear.) As the professors had not been selected by favor, but for the high character that they brought, so he felt he should not need to say more than to remind them that the surest way to preserve their influence over those entrusted to their care was by kindness and decision, always the most effective way of managing mankind. His Grace also addressed some excellent advice, in continuation, to the students, and concluded by expressing his gratitude to the Lord Mayor and Sheriffs, as well as to the

ladies who had honored them with their attendance on the occasion.

The following "Regulations" were then read.

"The council of administration, in promulgating the statutes of the college, determines that as the students are gentlemen of birth and education, they shall be provided for and treated as such, and therefore the council in framing regulations for the students, has endeavored to avoid all unnecessary restraint, and to afford every reasonable indulgence.

"The council confides in the honor of the students themselves for the strict observance of these statutes, as essentially necessary to secure the dignity and establish the stability of the college.

"The council expresses its belief, that the students will prove themselves worthy of the trust thus reposed in them; and the students may rest assured that the council will do every thing in its power to promote the comfort and happiness of those entrusted to its care.

"The students of the college must bear in mind that they have three characters to support, of Christians, of scholars, and of gentlemen.

"They must therefore remember:—

"That all irreverence is most strictly prohibited.

"That all immoral conversation or ungentlemanly practices will be visited with the most severe displeasure.

"That as the profession of the civil engineer is of a high and ennobling character, they should enter upon the study of the same with feelings of lawful ambition; and that as excellence and eminence in that profession is to be attained by the most diligent application alone, so they should put away all trifling considerations, and give themselves wholly to their work.

REGULATIONS:

"1. The resident director is the representative of the council, and must be implicitly obeyed.

"2. The sub-director is the assistant of the resident director. The students must obey his orders as those of the resident director.

"3. The resident director will select certain students to act as monitors.

"4. The duties of the monitors will be to see that the students observe the regulations of the college, and report all irregularity.

"5. The monitors will be entitled to the use of separate studies, to access to the library, and to such other privileges as the council may from time to time accord.

"6. The students will, from 1st March to 1st November, rise at six and retire at ten; breakfast at seven, and sup at half-past eight. From 1st November to 1st March, rise at seven and retire at half-past nine; breakfast at eight and sup at eight. The dinner at one, and tea at five, throughout the year.

"7. The students are to attend chapel at ten o'clock every morning, and at five o'clock every evening.

"8. The students will attend the lectures and instruction of the several professors and masters, and the practice of the field and workshop, at the time fixed by the resident director.

"9. The students, when absent from the college, whether within the boundary or upon special leave, should remember that their conduct will reflect honor or reproach upon the institution of which they are members.

"10. The students are required on all occasions to appear in the uniform of the college.

"11. No pupil will be permitted to enter his dormitory after he leaves it in the morning, until he retires to rest.

"12. Any monitor offending, will subject himself to a punishment of a higher degree to that which would be inflicted on a 'student.'

"13. On all occasions of dispute between pupils, the matter in question shall be referred to a committee of inquiry, consisting of the sub-director, as president, two monitors, and two pupils, selected by lot.

"14. That the students will, on all occasions,

treat the officers, professors, and masters of the college, with becoming respect.

"BUCCLEUCH, President.

"RICHMOND, Chairman.

"J. E. B. CURTIS, Secretary."

The Earl of Devon, in rising, said, that he had only just reached London by the railroad, in consequence of his anxiety to be present on this highly interesting occasion.

He then expressed his anxiety for the success of the institution, and his confidence that the more it was known the more it would be sure to receive the support it so well deserved from all classes of her Majesty's subjects. It could only be from a misapprehension of its principles, that it could encounter any opposition or difficulty. If its objects were those which his noble friend had stated, and if through its means the people received the best education which could be given them, there could be no doubt of its success, for the public would adopt and support it, and carry it through all its difficulties. As to the extent to which classical information should be given in this institution, that would mainly depend on the talent or the inclination of the pupils themselves, and the views of their parents and friends respecting their future pursuits. He trusted that ere long there was not a corner of England, Ireland, or Scotland, but would be glad to send forth candidates for education. He had lately been in Ireland, where a great number of gentlemen had applied to him to learn the reality of the prospect of sending their sons over to be thus educated, and spoke of it as one of the greatest advantages that could beset them. He (the Earl of Devon) trusted that they would find it so, especially under such a well-founded system as they were about to act upon, for he held, with his noble friend, that education to be good for nothing, which did not include religion. They proposed not only to make good scholars of their pupils, but good citizens also; and to do this, they must be made good men, and, in short, good Christians. (Applause.)

Mr. BERKELEY WENTWORTH then rose. He began with remarking, that the building in which they were then assembled had been completed in the almost incredibly short space of 14 days. He hailed this as a happy omen of future success. After remarking, with a feeling of pleasure, on the liberal support accorded to the institution, he proposed that "the grateful thanks of the council be given to the noblemen who had so ably and effectively supported the institution up to the present moment."

The Lord Mayor seconded the resolution, and eulogised the munificence of the two Noble Dukes especially adverted to.

The resolution was then passed by acclamation.

The Duke of BUCCLEUCH returned thanks, and assured the meeting that he should not cease to persevere in the course he had commenced.

The Duke of RICHMOND also returned thanks, and said he felt confident that, when a really good thing like this institution was sufficiently made public, it would never require further private support. He might be permitted to say, for the aristocracy of England, that they considered it one of their proudest boasts to be able to come forward and aid in the promotion of good and useful undertakings, not only of this country, but of all others. The aristocracy properly felt that their highest influence was founded on the welfare of the people, and that if they withdrew themselves from the consideration and support of that welfare, their high standing would probably be of short duration, for they would deserve to fall. (Hear, hear.) He took the approbation, which the aristocracy received whenever they came forward to assist in works of this character, as one of the most satisfactorily proofs that they were discharging their duty to the public. (Cheers.) The Duke, in the course of his speech, remarked that "the council had painted the picture—They, (the Dukes) were the frame."—Earl Devon, on this, remarked "they (the Dukes) did the gilding also."

The company then left the school-room, and re-

tired to another apartment where an ample and choice variety of refreshments had been provided by the liberal foresight of the council. It was a pleasing sight to observe the students, in their uniform, as they marched down with the professors to the chapel; they afterwards dined together in the workshop, and drank the health of the president, and success to the College, with enthusiasm. We heard it remarked by several professors, that they were a set of very "smart fellows," a compliment we think well merited.

The company paraded about for a short season; after which, the numerous visitors took their leave, well pleased with the day's entertainment, and wishing every success to the Institution.

THE SULPHUR QUESTION.

The state of our relations with Sicily, owing to the dispute respecting the grant of a monopoly of the sulphur trade to a French company, naturally excites much attention in France, and the *Journal des Debats* of the 29th ult. published a supplement containing an *exposé* of the question, which occupies eight closely printed columns. From this document, which gives a history of the sulphur trade, resembling in its main facts the account we published in a recent number, we shall now make selections of such passages as either throw light on this interesting question, or exhibit in a strong point of view the feeling which animates a great part of the French public respecting the interference of this country to suppress the monopoly.

The annual consumption of sulphur, says the *Journal des Debats*, is estimated at 50,000,000 of kilogrammes (a kilogramme is equal to about 2 lbs. 3 ozs.). France and England are the two principal countries to which it is sent. Though sulphur exists in all volcanic countries, and even in a great many natural formations, both animal and vegetable, experience has proved that it cannot be extracted in large masses, and in good condition, excepting in certain places where it is found in thick beds, as in the sulphur mines of Sicily. Some details extracted from the official documents of our custom-houses will show the extent of the commercial transactions in this article, at least so far as France is concerned. There have been imported into France, and cleared for consumption in this country, the following quantities:—

In 1813.....	536,028 kilogrammes.
— 1820.....	6,790,236 "
— 1825.....	10,570,205 "
— 1830.....	12,921,644 "
— 1835.....	18,625,522 "
— 1838.....	18,578,710 "

There are few articles imported that exhibit so rapid and such a considerable increase. Another striking fact collected from these documents is, that one country in Europe alone, Sicily, furnishes almost all the sulphur that is consumed. Of the 18,500,000 kilogrammes imported into France in 1836, Sicily supplied 17,500,000.

Sicily, then, possesses a real natural privilege, arising from the volcanic formation of the country; but she has not till lately known how to make use of this privilege for her own advantage. Science and capital were wanting to enable the Sicilians to work the sulphur mines, of which there are about 150, to the best advantage. The bad state of the roads, and the distance of the mines from the seaports, increased the expenses, which fell most frequently on the producer. The competition of the workers of the mines, owing to their ignorance of the great demand for sulphur, and of the limited sources of supply, threw them almost entirely at the mercy of a small number of speculators, who easily obtained the complete control over the trade in a commodity, the production of which is confined

to certain known limits, and imposed the restrictions of their mercantile combinations both on the produce of that commodity, and on the manufacturers who employed it.

Before the contract of 1838, the trade in Sicilian sulphur was almost exclusively confined to the English. Fifteen or twenty English commercial houses, established at Palermo, Messina, and at Syracuse, were in possession of the monopoly of that commodity. By means of advances made to the proprietors of the mines, they induced them to sign engagements, by which the produce of the mines for two or three years in advance were mortgaged at a very low price. The result of this state of things was, that the Sicilian sulphur proprietors were reduced to great distress, which in late years was augmented by the following circumstances.

Sulphur is almost entirely used in the manufacture of sulphuric acid, and the principal port of exportation for it was Marseilles. To that port, before 1832, the greater part of the 300,000 cantari (a cantari is equal to about 170 lbs.) of sulphur exported from Sicily for that manufacture were carried. In 1832 England commenced the new process of manufacturing soda with sulphuric acid, and there was consequently an enormous and instantaneous increase in the consumption of sulphur; the price of which rose excessively high. In 1833 the price rose in Sicily from eleven or twelve tarins (a tarin is the tenth part of a ducat) to fifty-five tarins; and the rise was proportionally much higher in our markets. Such an increase in value stimulated the production of the article in a most extraordinary degree. The annual produce of sulphur was trebled, and amounted to 900,000 cantari; but the consumption having scarcely doubled, this increased production occasioned an annual excess of 300,000 cantari; which from 1834 to 1837 glutted the depots in Sicily, and the foreign markets, with quantities of sulphur enough for eighteen months' consumption, and caused the price gradually to fall to ten and twelve tarins, the same as it was before the great rise in 1833.

In the meantime, the increase of production had increased the expense of procuring the sulphur. Mines had been worked more and more distant from the places of shipment, which had very materially increased the cost of transport in a country wanting the means of communication. The cost of production was raised to 13 and 14 tarins, and it was no longer reimbursed by the selling price of the article. In this situation it was requisite, in order to establish an equilibrium between the supply and demand, to diminish the production, for three years at least, to 300,000 cantari the same, as it was before 1832. But it would have been impossible to adopt this means among hundreds of proprietors separated from one another, disunited by the spirit of competition, and so ignorant of the cause of the evil under which they suffered, as to conceive the possibility with such a continued excessive production of the return of the high prices which had for a moment turned all their heads. The danger of inundation, to which the abandoned mines would be liable, formed, besides, a powerful motive for the continuance of even the most expensive workings, from the fear of losing all if they were discontinued. They continued therefore to extract annually from 600,000 to 700,000 cantari, that is to say, fully equivalent to the foreign consumption; and the eighteen months' supply in advance, which had been produced, therefore bore continually upon the market; and it was impossible to see the end of a state of things which placed the produce of Sicily, which should have enjoyed the advantage of a privileged manufacture, in a condition by which from 20 to 25 per cent. was lost by the cost of production.

The proprietors of mines in their distress applied to their government to beg assistance, and many means were pointed out for the purpose of reducing the supply to the demand. The necessity of some measure of this kind was universally admitted, but the measures proposed, of stopping the working of the mines, had the double inconvenience of being violent, and of not presenting to the proprietors any definite future advantage. On examining the sei-

phur question more closely, the Neapolitan government were led to consider why a product which belonged exclusively to Sicily, and which was indispensable to foreign manufactures, should produce no profit either to the state, as no land-tax was assessed upon the mines, nor any export duty levied on the sulphur—or to the producers, who could not even cover the costs of working the mines—or to the country, the agricultural interest having suffered most severely by the withdrawal, in the first place, of laborers from agriculture to work the mines, and by the sulphurous exhalations of the mines, which were injurious to agricultural produce.

In this state of things, M. Taix, a French merchant, formed a company for the purpose of giving satisfaction to all interests concerned. He proposed to reduce the production to 600,000 cantari, so long as the consumption required no more, offering to buy these 600,000 cantari at the price of 23 tarins, on condition that he should be the only purchaser. He engaged to indemnify the mining proprietors at the rate of four tarins per cantaro for the 300,000 cantari which they would be prohibited from producing annually, and always to keep a stock of sulphur for the purposes of trade, the maximum price of which should not exceed 43 tarins per cantaro. M. Taix also engaged to make annually, at his own expense, 25 miles of roads in Sicily.

In this manner, a monopoly was to be formed by which considerable advantages were to be derived by the producers of sulphur in Sicily, on account of the increased price which it would secure to them for their commodity, and to the country itself, by increasing its means of communication. The project of M. Taix was adopted by the cabinet of Naples, in September 1837, after a favorable report of it had been made by special commission selected from among the principal proprietors of mines, and from the most distinguished men of the country. The council of Sicily, sitting at Naples, also adopted it by a majority of four to one, on the 23d of December in the same year. The King of Naples, notwithstanding these concurring opinions of the excellence of the plan, thought it necessary to exact a new extension of the arrangement, for the purpose of depriving it of all appearance of monopoly, and of increasing the advantages to be derived from it by the state. After long discussions, a treaty was signed, on the 9th of May, 1838, which essentially modified the original plan, in accordance with the intentions of the King of Naples. According to this treaty, the amount of the production is fixed at 600,000 cantari, the producers being at liberty to sell to whom they please; but the company to have the privilege of buying from the producers any quantity of sulphur that they chose to offer to them, at the price of 23 tarins, without prejudice to the indemnity of 4 tarins for the quantities which are prohibited from being worked. A premium of 20 tarins is payable to the company for every cantaro of sulphur exported; the third of which premium, or duty on exportation, amounting at the least to 400,000 ducats on 600,000 cantari, must be paid by the company into the public treasury. The company is bound also to have always a supply of 150,000 cantari of sulphur in Sicily, for the demands of commerce, at a maximum price of 43 tarins.

The *Journal des Débats* having given this version of the treaty, proceeds to defend it as eminently advantageous to Sicily, without being liable to the objection of monopolies in general, as the trade is open to merchants of all other nations at a fixed price, not more than sufficient to remunerate the proprietors of the mines for the expense of working, and to yield a fair profit to the company; after having paid the government export tax, and discharged all the engagements which the treaty binds them to execute. The *Journal* afterwards proceeds to condemn what it terms the imperious conduct of England, and refers to, and quotes, the treaties of commerce between this country and Sicily, for the purpose of showing that they contain nothing to prevent the Neapolitan government from entering into the sulphur treaty with the

French company. The article is evidently written by some one interested in the monopoly established by the French company, and it concludes by urging the justice and necessity of adequate compensation should the treaty be annulled.

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING MAY 2, 1840.

ENGLAND.

JOHN WILLIAM, Commercial-road, ironmonger and ships' fire hearth manufacturer, *improvements on ships' hearth and apparatus for cooking by steam*, April 27.

WILLIAM CHOICE, Strahan-terrace, auctioneer, and ROBERT GIBSON, White-conduit-terrace, builder, Islington, *improvements in machinery for making bricks*, April 27.

CHARLES KENNEDY, Virginia-terrace, Great Dover-road, Surrey, surgeon and apothecary, *improvements in the apparatus used for cupping*, April 29.

JOHN GOULDING, of America, and Cornhill, London, engineer, *improvements in the machines used for carding, slubbing, slivering, roving, or spinning wool, cotton, waste silk, short stapled hemp, and flax*, May 2.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO THE WEEK ENDING MAY 2, 1840.

(Continued from p. 260.)

ENGLAND.

HENRY VENNER COCKS, Birmingham, Warwick, ironfounder, *certain improvements in stoves and furnaces*, April 30.—This improvement is for converting a close stove to an open stove. The fire-grate has a chamber placed above it, which is connected with a space behind the grate; a tube passes through this space, and opens at the bottom as well as at the top of the stove. The flame passes into the upper chamber, and is directed thence horizontally around the tube or warm-air circulator, and into the chimney.

The atmospheric air entering at the bottom of the vertical pipe, and passing off at the upper end into the apartment, becomes heated without causing that dryness in the air so perceptible in rooms where the close stove is used.

Another method is to pass by a curvature the upper end of the vertical pipe into the chimney.

SAMUEL MORAND, Manchester, Lancaster, merchant, *improvements in stretching fabrics*, May 2.—This improvement on a former patent is for constructing the chain in such manner, that the wire prickles for holding the cloth may be removed, and fresh ones replaced when required.

Second improvement is for placing a parallel apparatus at one end of the stretching machine, which may be widened according to the breadth of the shrunk cloth. A socket, with reverse threads, is supported by brackets; and screw arms, entering on each side, are turned by means of bevelled gear, which are connected with a spindle or shaft leading the whole length of the machine. From this parallel apparatus the chain for holding the cloth gradually diverges to another part, where it again runs parallel, and of the width required for the cloth. The moveable prickles are placed on the upper surface of this chain, so as to hold the opposite selvage of the cloth. The parallel apparatus first receives the cloth in its shrunk state, as after dyeing; hence it gradually diverges and passes on to

that part where the chains hold it to its proper width.

Third improvement is the application of a long shaft, with bevelled gear, for turning the axles, that support the carrier wheels or discs, with notches on their periphery, which notches are for the purpose of taking the pins that hold the links of the chain.

Fourth improvement is the application of joint rods, that hold out the chains to their proper width.

Fifth improvement is for arranging the guide of the chain, and for moving the carriage off the parallel apparatus, either outwards or inwards longitudinally.

THEOBALD WAHL, George-yard, Lombard-street, engineer, *improvements in boilers applicable to locomotive and other engines*, May 2.—This improvement is for the mode of obtaining the expansion or contraction of tubes, by the employment of split rings with wedges for affixing the tubes of steam boilers.

In order to fix the tube to the plate of the boiler, a ring, with a groove on its periphery, about the thickness of the boiler plate, has a wedge space cut out, for the reception of a wedge. When the tube is put in within the hole of the plate, the ring is placed within the tube, and in coincidence with the edge of the boiler plate; the wedge is then forced into the space formed in the ring, which causes it to press the surface of the tube against the plate and within the groove; thereby making a firm hold, and preventing the possibility of leakage.

WILLIAM HANNIS TAYLOR, New York, and now of Wellington-terrace, Waterloo-road, Surrey, *improvements in obtaining power by means of electromagnetism*, May 2.—In examining this specification with its drawings, which do not give the relative powers to be obtained, we did not conceive that any operative force could be derived from the influence of electric fluid.

We have since been favored with an inspection of the machine while at work, and how agreeable was our surprise to find that a wheel scarcely three feet in diameter was revolving with considerable velocity by means of an invisible force, and putting in motion a lathe, at which a turner was forming small ivory boxes. This is really a curiosity, and deserves the attention of the curious as well as all scientific men.

The patentee's claim under this invention, is for the plan of alternately magnetizing or de-magnetizing or otherwise letting on and cutting off the electric fluid so as to influence pieces of iron fitted as electro-magnets.

A rectangular frame with legs to it, supported the wheel and axis; the periphery of the wheel was entirely of wood, being a non-conductor; but on the periphery of the wheel, at equal distances, were let in seven pieces of soft iron, about two inches square. Four pieces of soft iron, horse-shoe shape, were fixed to the rectangular frame at given intervals, with their polar ends pointing to the wheel, and so near that the square pieces of the iron shell in revolving, pass, but not touch, these polar ends. The electric battery, about 10 inches square, was placed on a stool near to the frame; and the wire that led from the left side of the battery passed along the left side of the frame; to this wire were attached four separate twisted wires, leading to the left pole of each of the horse-shoe-shaped irons. The wire that led from the right side of the battery passed along the right side of the frame, and turned up to press on a disc of copper, affixed on the axis of the revolving 3 feet wheel; close to this disc is a second disc of copper, with seven pieces of ivory let into its periphery at equal distances. These discs are insulated from the axis of iron, by means of an ivory collar, in order to cut the stream of electricity, and keep it to its proper channel. Annexed to the second copper disc, is a segmental disc, supporting four short levers at given distances. The levers have turned ends, with knife edges, pressing on the disc, that has ivory on its periphery; at the reverse end of the levers are twisted wires, or chains, leading to the right side of the horse-shoe shaped irons. It may be observed that each

horse-shoe shaped iron is connected by a twisted wire or chain to its nearest and separate lever; so that the electric fluid passes to each, and, by a simple and ingenious contrivance, the electric fluid is cut off or let on as required.

The seven pieces of soft iron on the periphery of the three feet wheel, the horse-shoe shaped irons, the pieces of ivory on the revolving disc, and the four levers on the segmental disc, must all be accurately arranged, so that the electric fluid shall flow from the battery, and magnetize or de-magnetize each horse-shoe shaped iron in succession. That is, at starting, the wheel is placed in a position for one of the pieces of square iron to be nearly touching the first horse-shoe shaped iron, that is nearest the battery; in this position its connecting lever with knife edge presses on the copper part of the disc that has ivory inlets; consequently the electric fluid passes from the battery and gives a magnetic influence to the first piece of horse-shoe shaped iron, so as to attract towards it the square piece of soft iron on the periphery of the three feet revolving wheel, and just as this square piece of iron comes opposite the poles of the iron, fitted as an electro magnet, the ivory part of the revolving disc passes under the connecting lever with knife edge, so as to immediately cut off the supply of the electric fluid, or otherwise de-magnetize the first horse-shoe shaped iron; while the second, third, and fourth, keep acting in succession, with equal accuracy and force; whereby the wheel in a very short time acquires a velocity of action equal to turn a small lathe.

The segmental disc is so simply arranged, that the action of the wheel can be reversed at a moment's notice, and stopped if required with equal facility.

ENTERED AT THE ROLLS CHAPEL OFFICE, UP TO
THE WEEK ENDING MAY 2, 1840.

(Continued from our last.)
ENGLAND.

WILLIAM NEWTON, Chancery-lane, civil engineer, *certain improvements in machinery or apparatus for making or manufacturing screws*, April 24.—First improvement is for cutting off screw blanks from a continuous length of wire, by means of a die holder, that is worked by infinite levers. On each length of wire being cut, and while it is in the die, a hammer forms the head of the screw blank.

The second improvement is for arranging the blanks from promiscuous masses in a hopper, to consecutive order, and in succession, along curved guides, placed between two drums below the hopper, which, in revolving simultaneously, have spring lifters projecting into the heap of screw blanks, for the purpose of arranging the mass in case the blanks do not fall into the curved guide, with their heads upward. Cam rings, that stand concentric with the drums, cause these spring lifters to work to and fro.

Third improvement is for bringing the blanks, arranged in the curved guide as aforesaid, and placing them under the influence of a rotary cutter that nicks the head.

Fourth improvement brings the screw blank with their points forward, and in coincidence with the end of a hollow axle, through which the blanks are guided to the reverse end, where lever clips or chaps hold each blank in succession, while the cutter or threading tool forms the thread of the screw.

This rotary cutter or threading tool has on its periphery helical grooves, formed and crossed by diagonal notches.

JOHN CUTTEN, Margate, *improvements in garden pots*, April 30.—This simple improvement is merely to form the garden pot, while in the turner's lathe, with an annular groove at the bottom, representing in appearance a garden pot with the saucer adhering to its base.

Heretofore the saucer was a separate article, which was liable to be broken, but in this improve-

ment it becomes an adjunct, for the purpose of holding water, which passes through the pores of the earthenware material.

STEPHEN GEORGE DORDOY, Blackman-street, Borough, chemist, *certain improvements in the manufacture of gelatine, size, and glue*, April 30.—The skins are put into a suitable receiver, and are left in cold water until they become slightly putrescent; when they are well washed in cold water and with stampers; a mixture consisting of 8 oz. of chloride of potash or soda, with 4lb. of hydrochloric or other acids, and two gallons of water, must be added to every cwt. of skins.

The receiver is heated by steam at about 100 Fahr., at the end of 24 hours the solution may be poured off, and another quantity of mixture is added, when the heat is increased 20 deg. Fahr. The skins must undergo several steepings in this impregnated mixture, and until the whole is dissolved. The solutions may be combined and evaporated to any degree of consistency.

ENTERED AT THE PETTY BAG OFFICE, UP TO THE WEEK
ENDING MAY 2, 1840.

(Continued from page 227.)
ENGLAND.

ALEXANDER ANOUS CROLL, Greenwich, Kent, manufacturing chemist, *improvements in the manufacture of gas, and in re-converting the salts used in purifying gas; and improvements in the manufacture of ammoniacal salts*, May 2.—First improvement is to receive, on an iron carriage running on a railway, the coke as it is poured hot from the retort; hence it is conveyed to a furnace for the purpose of imparting its heat.

Second improvement is for passing the gas through a solution consisting of 1 cwt. of chloride of zinc dissolved in 40 gallons of water. The ammonia and part of the sulphuretted hydrogen is collected from the gas, which is proved by prepared litmus paper being turned from red to blue.

Third improvement is for taking the ammonia from the liquid, which being allowed to settle, is poured off from the insoluble particles, which are dissolved by some acid formerly combined with its base, or by muriatic or sulphuric acid, for re-use.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of June 13. Each party will receive, in addition, a private communication to the same effect.

- George Davey, Llandudno, Carnarvon, mine-agent, due June 2.
- Luke Hebert, Birmingham, patent agent, due June 2.
- Miles Berry, Chancery-lane, due June 2.
- Godfrey Anthony Ermel, Manchester, cotton spinner, due June 2.
- John Evans, Birmingham, paper-maker, due June 2.
- Henry Dunnington, Nottingham, lace manufacturer, due June 2.
- James Guest, Birmingham, merchant, due June 2.
- George Saunderson, Hook Norton, Oxford, clerk, and James Wilmot Newberry, of the same place, farmer, due June 2.
- Henry Trewitt, Newcastle-on-Tyne, due June 4.
- Christopher Nickels, York-road, Lambeth, due June 4.
- Pierre Narcisse Cronier, Fricourt's Hotel, St. Martin's-lane, due June 4.
- James Mayer, Ashley-crescent, St. Luke, June 4.

George Lowe, engineer to the Chartered Gas Company, and John Kirkham, engineer to the Imperial Gas Company, both of London, due June 4. James Nasmyth, Patricroft, Manchester, engineer, due June 4. John Heaton Hall, Doncaster, chemist, due June 5.

FOREIGN PATENTS.—BELGIUM.

LIST OF PATENTS RECENTLY GRANTED BY THE BELGIAN GOVERNMENT.

(Continued from No. 37.)

Markelbach, F. J., of Antwerp, rue des Sœurs Noires, No. 1,792, a patent of invention for 10 years, for an economical stove on a new system, for heating offices, apartments, &c., April 16, 1840.

Sax, A., jun., musical instrument-maker, Brussels, rue Notre Dame aux Neiges, No. 70, a patent of invention for 10 years, for a new system of making clarionets, April 16, 1840.

Singler de Welle, A. B., of Paris, represented by M. Doré, St. Josse-ten-noode, chaussée de Louvain, No. 24, Brussels, a patent of improvement for 5 years, for improvements in bleaching tissues of flax, cotton, or other substances, as well as fibrous substances, and in the apparatus for that purpose, April 16, 1840.

Cartier, F. C., mechanic, Brussels, rue de Fabriques, No. 2, a patent of invention for 5 years, for a purifier (épurateur) for bleaching rags for the manufacture of paper, April 17, 1840.

Heindryck, Floride, Brussels, rue Botanique, No. 25, Faubourg de Laeken, a patent of invention for 10 years, for a new system of manufacturing buttons with flexible shanks, April 17, 1840.

FOREIGN PATENTS.—FRANCE.

A LIST OF PATENTS GRANTED BY THE FRENCH GOVERNMENT FROM DEC. 15, TO DEC. 22, 1838.

(Continued from No. 39.)

No. 269. Aulnette, Jean Marie, of Paris, quai de Jemapes, No. 182, a second patent of improvement and addition to the patent of invention and improvement for 10 years, which he obtained May 5, 1838, for new processes of paring and flooring, of building walls and banks, and of manufacturing gutter spouts of bitumen and bituminous compositions, Dec. 15, 1838.

270. Claneau, Eugène, of Paris, rue du Faubourg Saint Antoine, No. 123, a patent of invention and improvement for 5 years, for paper, called "papier oriental," Dec. 15, 1838.

271. Clare, Ambroise, of London, represented at Paris by Bloqui, place Dauphiné, No. 12, a patent of importation for 10 years, for certain improved means of producing figured surfaces, sunk or in relief, and of printing therefrom, as also of moulding, stamping, and embossing, Dec. 15, 1838.

272. Desban, Jean Baptiste, of Rheims, a patent of improvement for 5 years, for improvements in the "loup batteur," which may be now adapted to all kinds of wool, whereas previously it was employed with advantage only for short wool, Dec. 15, 1838.

273. Etienne, Auguste, represented at Paris by Reynaud, rue du Temple, No. 119, a patent of invention and improvement for 5 years, for processes of printing colors upon silk, Dec. 15, 1838.

274. Eude, Pierre Joseph, of Offranville, arrondissement de Dieppe, a patent of improvement and addition to the patent of invention for 10 years which he obtained Oct. 8, 1836, for a means of applying the chronometer to measuring the supply of hydrogen gas, Dec. 15, 1838.

275. Gilles, François Frédéric, and Bouchey, Auguste, of Gaugueville, département de Seine et

Oise, a patent of invention for 10 years, for the application of springs as movers to locomotive engines, Dec. 15, 1838.

276. Henry, Philibert Paulin, of Paris, rue Poissonnière, No. 13, and Real, son, of Solesmes, département du Nord, a patent of invention for 15 years, for a machine for the purpose of manufacturing a woven fabric, called "tulle mousse," Dec. 15, 1838.

277. Lefebre, Louis Alexandre, of Paris, rue du Jardinet, No. 13, a patent of invention for 5 years, for a method of putting vessels in motion, Dec. 15, 1838.

278. Leloup, Jacques, represented at Paris by Reynaud, rue du Temple, No. 119, a patent of improvement and addition to the patent of invention for 15 years, which he obtained Sept. 15, 1838, for improvements in oscillating steam-engines, Dec. 15, 1838.

279. Moreau, Félix, of Paris, rue Notre Dame des Champs, No. 46, a patent of improvement and addition to the patent of invention for 5 years, which he obtained Nov. 24, 1838, for means of executing mechanical processes, sculptures, gravings, castings, columns, bases, capitals, vases, &c., in hard substances, such as porphyry, granite, marble, stone, &c., Dec. 15, 1838.

280. Périaux, Thomas Gabriel Adolphe, represented at Paris by Reynaud, rue du Temple, No. 119, a patent of improvement and addition to the patent of invention for 10 years, which he obtained July 31, 1838, for new kinds of continuous impressions, obtained by means of endless paper making machines, by arranging the machines so as to effect such impressions, Dec. 15, 1838.

281. Pertus, Antoine, of Lyons, rue du Griffon, No. 5, a patent of invention and improvement for 5 years, for a new portable economical heating stove, of sheet or cast iron, for the purpose of heating apartments, Dec. 15, 1838.

282. Barker, Georges, of Liverpool, represented at Paris by Garnier, place de la Bourse, No. 12, a patent of invention for 10 years, for a process of rendering shoes and boots waterproof, Dec. 19, 1838.

283. Cadiot, Nicolas, of Reichshoffen, département du Bas Rhin, a patent of invention for 5 years, for an apparatus for collecting the heat in the ovens of glass-houses, Dec. 19, 1838.

284. Cottin, Alexandre, of Paris, rue Sainte Avoye, No. 23, a patent of invention and improvement for 10 years, for a new mechanical lamp, called "à foulons ascendans," Dec. 19, 1838.

285. Delice Gueuvin, Simon, and Bouchon, Louis Armand, of Ferté sous Jouarre, département de Seine et Marne, a patent of invention for 10 years, for machines for cutting hard stones, Dec. 19, 1838.

286. Lauberac, Joseph, of Paris, rue du Mail, No. 15, a patent of improvement and addition to the patent of invention for 15 years which he obtained Aug. 30, 1838, for a mechanism for increasing the speed of carriages, boats, and wagons, Dec. 19, 1838.

287. Mahiet, Charles, of Chinon, département d'Indre et Loire, address at Paris, rue du Bouloï, No. 18, a patent of improvement and addition to the patent of invention for 10 years which he obtained Oct. 2, 1835, for a new mover, which may be used instead of steam-engines of any kinds, Dec. 19, 1838.

288. Parent Delannoy, Louis Félix, of Offranville, arrondissement de Dieppe, a patent of invention for 15 years, for an organised mechanism, applicable to locomotives on land and water, Dec. 19, 1838.

289. Puget, Louis, of Paris, rue des Francs Bourgeois, No. 25, au Marais, a third patent of improvement and addition to the patent of invention for 5 years which he obtained Dec. 10, 1836, for new combs for establishing the head-dress without the use of black pins, Dec. 19, 1838.

290. Villoing, Alexandre, represented at Paris by Reynaud, rue du Temple, No. 119, a patent of importation and improvement for 10 years, for an ex-

porating and concentrating apparatus applicable to all liquids, Dec. 19, 1838.

291. Ardoïn, Augustin, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of invention for 15 years which he obtained Sept. 5, 1838, for preserving animal and vegetable substances generally, and particularly wood, cloth, and cordage, from decay and dry-rot, Dec. 22, 1838.

292. Bertham, Christophe, of Liverpool, represented at Paris by Truffaut, rue Favart, No. 8, a patent of importation for 10 years, for paddle-wheels with inclined paddle-boxes, applicable to steam-boats, Dec. 22, 1838.

FOREIGN CORRESPONDENCE.

FRANCE.

THE FOREIGN AND COLONIAL TRADE OF FRANCE.

Some very interesting, and for the most part very satisfactory, tables have been published by the administration of customs respecting the commerce of France with foreign states, and with her own colonies, for the year 1838. Before entering into particulars we shall give, in a few lines, some general results, which will enable our readers to understand more clearly the situation of our export trade with the principal powers of Europe, and will indicate those branches of trade towards which the national activity ought to be directed.

Foreign commerce, considered in its general bearings, comprehends all those things which are imported or exported for a specific destination or use. We shall call that general trade, but it cannot be taken as an exact index of the actual prosperity of the country. When the foreign commerce comprises only those things which form part of the consumption of the country, we shall call that special trade; and from its extent we can draw conclusions, either favorable or otherwise, of the condition of national wealth and industry. It is to the examination of this trade, therefore, that we shall principally confine ourselves.

The general trade of France in 1838 amounted to 1,893,000,000 francs. This amount exceeds by 26,000,000 that of 1836; and by 300,000,000 that of 1837. The importations of articles classed as belonging to general trade in 1838 was 937,000,000, and the exports 956,000,000. Of articles of special trade the imports were 657,000,000 and the exports 659,000,000. On the whole, the articles of general trade exceeded that of the special trade by 577,000,000. As regards the mode of transport of these commodities, the transport by sea in comparison with that by land was in the proportion of 7 to 3. We shall see presently how much of the freight was carried in French ships.

England holds only the second place in our foreign commerce according to one report, and the fourth place according to another. Nevertheless, owing to the political importance of that country, and the negotiations which have been recommenced with a view to extend our commercial relations with her, we shall commence our account with the interchange of commodities with Great Britain. England then, comprising Malta, Gibraltar, and the Ionian islands, sends us in value 54,754,460 frs. of articles employed in industry; of this quantity we consume 47,464,763 frs. She sends 3,000,000 frs. of natural products, which we consume; and 36,650,500 frs. of manufactured goods, of which quantity we consume only 13,753,185 frs. The importations of articles of general trade from England into France amounts therefore to 94,000,000, and of the special trade to 64,000,000 only. The following is the account of the exports. France sends to England, comprising Malta, Gibraltar, and the Ionian islands, 86,619,715 frs. in amount of natural products; of which England consumes rather less than one-half.

We export to England, 53,540,000 frs. in amount of manufactured goods, of which quantity she consumes about 45,000,000. The general trade of France with England, as regards exports, is therefore, 140,000,000 francs, and the special trade 87,000,000.

We will next take Belgium, which has a population six times less than that of England. Belgium sends us 48,847,569 frs. in amount of raw materials, of which we use 46,000,000; she sends us 12,000,000 of natural products, the whole of which we consume; and she also sends us 32,000,000 of manufactured goods, of which we consume 18,500,000 frs.

The general trade with Belgium, therefore, as regards imports, amount to 93,000,000; being 2,000,000 less than with England; and the special trade to 77,000,000; that of England being only 64,000,000. But the export trade with England exceeds that of Belgium. We send to Belgium in amount 20,000,000 of natural products and raw materials, and 35,000,000 of manufactured goods; making a total of 55,000,000, of which Belgium only consumes 45,000,000. It is worthy of remark, that we supply 35,000,000 of manufactured goods for consumption in Belgium, and only 31,000,000 that are consumed in England. We see from this circumstance, how much our manufacturing industry is superior to that of Belgium compared with that of Great Britain.

Spain presents a still more advantageous state of things. We import from that country 27,000,000 in amount of raw materials; we use 22,000,000. Spain sends us 4,500,000 of natural products, of which amount we consume three quarters; and 4,000,000 of manufactured goods, of which we consume 1,277,490 frs. The general import trade of Spain is, therefore, 35,000,000, and its special trade, 27,500,000. The following is the amount of our exportations to Spain: natural products 18,365,944 frs., manufactured articles 57,461,773 frs. Of the first (consisting of various natural productions) Spain consumes 11,547,506 frs., and of our manufactures Spain consumes 41,552,029 frs. Spain, next to the United States, is the country with which our manufacturing industry has the most numerous and advantageous transactions. This fact should be a warning to us not to lightly abandon advantages that we derive from former treaties and old connection. The re-establishment of peace in the Peninsula is, both politically and commercially considered, a most desirable event for France.

If our space permitted, we would notice the commerce with the Sardinian States, which amounts in general trade to an import of 111,000,000, and to an export of only 36,000,000 in special trade. The general trade between the United States and France amounts to 132,000,000 of imports; and a special export trade of 120,000,000 frs. It may be conceived from this, of what importance the monetary crisis in which North America is involved is to our commerce, the effects of which will be inevitably felt at the end of 1839 and in 1840.

The following is an abstract of the amount of the imports from our colonies: Guadeloupe, 15,192,701 frs.; Martinique, 15,594,485 frs.; Bourbon, 13,745,876; Senegal, 11,805,604; Cayenne, 3,417,307; making a total, with those of some minor colonies, of 65,433,250 frs. Our special export trade to our colonies amounts to 61,584,774 francs, and this traffic, to the amount of 130,000,000, is the more valuable to us, because it is effected by a navigation confined to our own ships, yet if they were not protected, the shipments by our commercial marine, in our own trade, would be in the proportion of one to three, as appears by the statements published in the documents to which we allude. But whilst speaking of our colonies, we must not forget Algiers, which imports 1,667,149 frs., and exports 25,000,000 frs.

Our mercantile marine has made no progress. In the period of ten years, of which we gave an account last year, our ships imported 3,749,703 tons, and there was imported in foreign ships 6,445,049; that is, almost double the amount. In the exports, the disadvantage on the part of the French ships was nearly the same. In 1838, it appears our shipping

has not diminished, but that of foreigners has increased. Our trade ought not only to increase, but it ought to increase at least in the same proportion as that of other nations. It will be easy to judge of the ineffective condition of our mercantile marine by the number and tonnage of our ships on the 31st December, 1838. We have 15,617 ships, but of this number 10,735 are coasting vessels of 30 tons burthen, and less, consequently unfit for long voyages. Only one of our mercantile ships is more than 800 tons, one of 700 tons, two are from 600 to 700; twelve from 500 to 600; forty-eight from 400 to 500; 171 are from 300 to 400; 568 are from 200 to 300, 1,300 from 100 to 200 tons; and all the rest are merely coasters. This is the defective state of our commercial navy, we might say in spite of heaven, which has given us 600 leagues of coast, stretching into three seas, and has supplied us with every requisite to become, with a little zeal and labor, a great maritime power. The proportion of English to foreign shipping employed in transporting commercial imports and exports is as 22 to 7. In the French mercantile marine, the proportion is nearly reversed, it is as 7 to 20.—From *Le Siècle*.

PAWNBROKERS' ESTABLISHMENTS.

Towards the end of the fifteenth century, when the people of Italy were suffering the double evil of foreign and civil wars; the greater part of the rich families were almost entirely ruined. The only class of men that derived advantage from the national distress was the Jews, who lent money upon pledges, and took from 70 to 80 per cent. interest. The evil at length reached to such a height, that it became necessary to apply a remedy. The inhabitants of Perugia were the first who paid attention to the subject. In 1491, a certain number of the richer classes in that town, out of charity, put together a sum of money for the relief of the distresses of the poor, to be lent to them at a low rate of interest; which interest was intended not so much for profit, as for the payment of the expenses occasioned by keeping the dépôt for the pledges received for the money lent. No interest was exacted when the sum required was small. This new establishment received the name of *Mont-de-Piété*, and its good effects were soon perceived. The workman, and even the merchant, had alike recourse to it in times of need; the former to procure the small sum absolutely necessary to finish his work; the latter to make up the balance which he wanted to discharge his engagements.

The benefits of such an establishment appeared so important, that Pope Sixtus IV. was desirous of conferring the advantage of it on his native town of Savona, where he established a *Mont-de-Piété* on the model of that of Perugia. Very shortly, similar ones were found at Cesarea, Mantua, Florence, Padua, Bologna, Naples, Milan, and at length in the capital of the Christian world. The Popes were anxious to encourage acts of charity, and the motives they assigned in their bulls authorising the formation of such institutions, were that they were intended especially for the purpose of securing to the poor ready and gratuitous relief. *Monts-de-Piété* were, at a late period, established in the manufacturing towns of Flanders. The religious authorities always interfered in these institutions to regulate the rate of interest to be taken.

At the beginning of the seventeenth century, *Monts-de-Piété* were formed in most of the principal states of Europe; and it was also attempted to establish them in France. An ordinance of Louis XIII. directed that there should be a *Mont-de-Piété* at the residence of every sequestration; that this officer should be the director, and that the interest should be fixed at six and even as low as at five per cent. This ordinance was never acted on. Louis XIV. directed that the *Monts-de-Piété* should lend gratuitously to the poor, to the amount of one crown, but the interest on larger sums was fixed at fifteen per cent. This inducement was scarcely more successful than the attempt of his predecessor, and the new *Monts-de-Piété* founded on this basis soon ceased to exist.

The definitive regulations of the *Monts-de-Piété*, and their permanent establishment in France, can only be dated from the early years of the reign of Louis XVI. It was by an ordinance of 1777, that the existing *Monts-de-Piété* in Paris was established. The letters patent of its institution, fixed the rate of interest to be taken at ten per cent. per annum. But in addition to this fixed rate, there were other conditional ones, which raised the annual interest to 13 per cent. at least.

The following is a statement of the *Mont-de-Piété* at Paris at the present time, estimated on an average of 19 years. From 1815 to 1833 this establishment has lent 376,372,000 frs. upon 21,166,000 articles, or pledges. The loans of the *Mont-de-Piété* in an ordinary year amount to 20,000,000 frs. upon about 1,100,000 pledges. The number of articles redeemed was about 868,000; upon which about 14,000,000 frs. had been advanced. The renewals amounted to 4,230,000 frs. The produce of the sale of about 58,000 pledges not redeemed was 1,000,000 frs.

Such is, according to the statistical tables of the department of the Seine, the annual statement of the accounts of the *Mont-de-Piété* at Paris.

Since the year 1815, *Monts-de-Piété* have been instituted at different times in our principal maritime and manufacturing towns. There is one at Lyons, Nantes, Bordeaux, Marseilles, Nîmes, Avignon, Besançon, Dijon, Rouen, Metz, Strasburg, &c. The interest on the sums lent, vary at these establishments from 4 to 15 per cent.

The total annual amount of the sums lent up to 1833, has been 27,884,000 frs.; and that of the sums reimbursed, 19,547,000 frs. Throughout the continent in general, the profits arising from these establishments are applied to the relief of the poor. *Moniteur Industriel*.

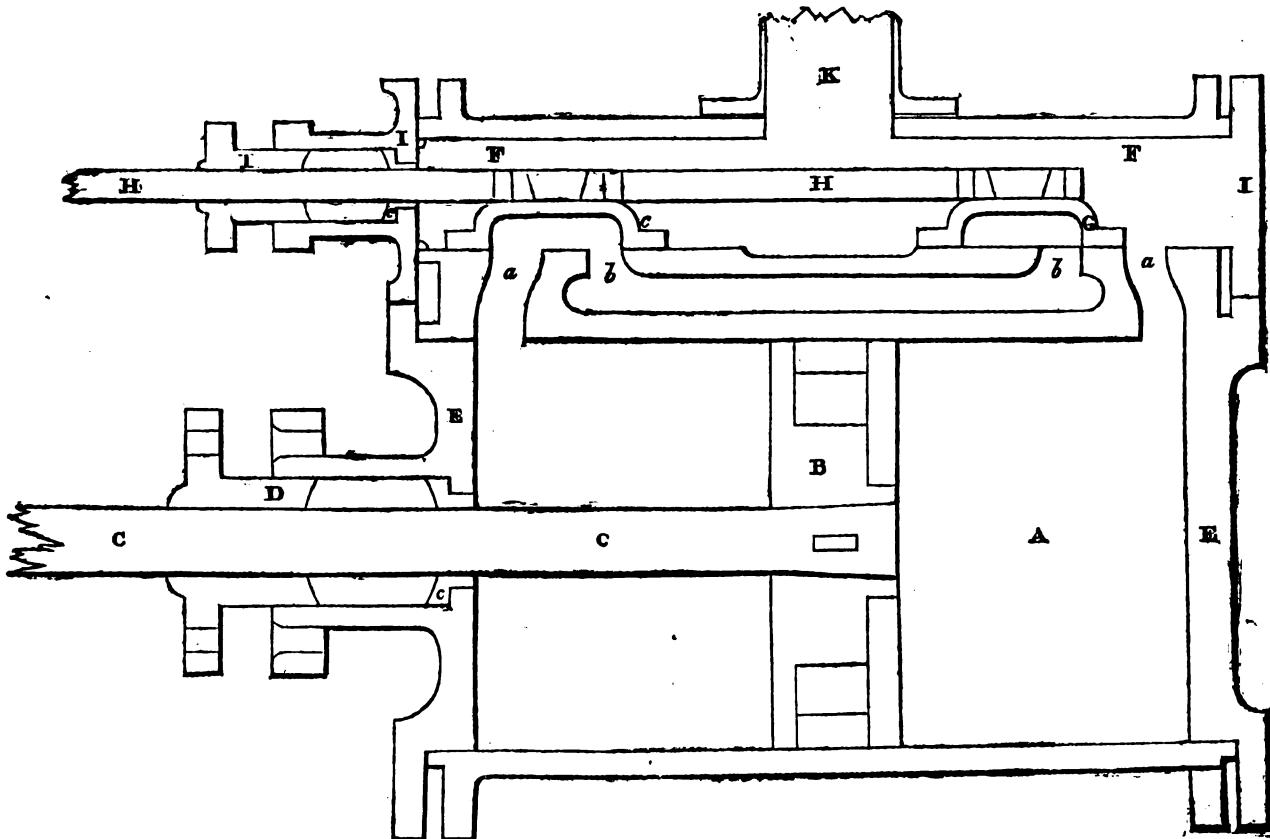
A CASE OF PATENT LAW IN FRANCE.

This singular question, "Is the cut of a pair of pantaloons, according to a method more or less economical, an invention worthy of a patent?" being submitted to the Court of Cassation, has lately been answered in the negative, under the following circumstances:—Heintz, a tailor in Paris, had, in 1837, obtained a patent for an economical cut of military pantaloons. The statements proving the utility of the discovery showed that it would lead to a saving of more than a fifth in the material, the amount of which, according to the inventor's calculations, would be above 10,000,000fr. per annum for the Minister of War. Heintz, therefore, set a high value on the communication of his secret, and asked 800,000fr. of the minister, who refused the offer. He soon extended his discovery to civil pantaloons, and obtained a new patent in 1838. This created a great stir in the workshops where the most indispensable part of man's attire is manufactured. Rival pretensions were brought forward, and a proceeding for infringement was instituted. The *Juge de Paix* drew a distinction between the military and the civil pantaloons, and decided, that while Heintz had an exclusive right in the former, there was no infringement with respect to the latter, inasmuch as before he had obtained his patent he had given his secret to the public. On an appeal, the Civil Tribunal of the Seine confirmed the sentence of the *Juge de Paix* by its decree, but the motives of the decree were different from those of the first Judge, as it was considered that calculations on the best use of a piece of cloth are not a subject for legal proceeding, or fit for a patent. This view was, perhaps, a little too general and exclusive, but, however, the motives of judgments and decrees decide nothing, and it is only against the decision itself that it is useful to appeal. Nevertheless the judgment of the Tribunal of the Seine was referred to the Court of Cassation for a violation of the law of the 7th of January, 1791, according to which every method of perfecting any manufacture whatever, no matter how humble, is an invention worthy of a patent securing the property to the inventor. The appeal was, however rejected, by the Court of Cassation.

LOCOMOTIVE ENGINE ON THE BELGIAN RAILWAY.—Figure 1.

TRAFFIC ENGINE.

SECTION OF THE CYLINDER AND VALVES.—(2 inch scale).

REMARKS ON THE CONSTRUCTION OF LOCOMOTIVES,
INTENDED AS ENGINES OF TRAFFIC.

A. represents the cylinder, 13 inches in diameter, and of sufficient length for an 18-inch stroke.

B. the piston, made of cast-iron, having a single ring (cast-iron) acting against the sides of the cylinder by its own elasticity, and without the aid of steel springs inserted in the interior of the piston. It is so constructed, that more or less pressure can be given by means of an adjusting screw. This plan of piston is simple, very efficient, easily manufactured, and not liable to derangement. The piston rod, c c, is ground into the body of the piston, and secured by means of a cotter.

D. the stuffing-box gland, made of brass, and attached to the box by means of two screw bolts.

E. the cylinder covers, c c, the brass rings for the piston, and valve rods sliding through.

F. the steam-chest, having covers, I I, at each end. These covers can be taken off when required, to examine the slides, G G, instead of having them on the top of the steam-chest, inside of the smoke-box, a method still adopted by many engineers. The inconveniences of the latter mode are a continual destruction of the screw bolts and joints from corrosion and heat of the chimney; besides, should anything occur to the slides, requiring immediate examination, it cannot be conveniently done by the opening inside of the smoke-box, from excessive heat arising from the fire; whereas, when the covers are on the ends, no such inconvenience arises.

G G, are the two slide valves, connected by the rod, H H. These valves are made of cast iron, and when well got up, are found preferable to those of gun metal.

K. the steam-pipe, leading from the regulator; it is generally made of copper or brass, $\frac{1}{2}$ of an inch in thickness, having a flange which is secured to the steam-chest by means of screw bolts.

a a. Passages for the admission and expulsion of the steam; dimensions, $1\frac{1}{2}$ by $8\frac{1}{2}$.

b b. Passages leading to the atmosphere, $1\frac{1}{2}$ by $8\frac{1}{2}$, or in proportion to the area of the cylinders as 1 to 12. This, we consider, a good proportion; it might with safety be even increased, say 1 to 10.

The arrangement of double slide valves we consider better adapted for engines of traffic, than the single slides so generally in use,—the object attained being the admission of steam into the cylinders, at a temperature and with an elasticity nearer to those in the boiler,—thus producing a greater effect on the piston, without any increased pressure on the boiler.

Many writers on the steam-engine make considerable allowance for the force of steam passing through long steam-pipes, having right or acute angles; some, indeed, go so far as to say that for every right-angled turn of a steam-pipe, one tenth of the effect of the steam is lost.

We cannot, however, imagine that so great an allowance as that must of necessity be made, but that a great loss is sustained from narrow acute passages is not to be doubted. The advantages of the double slides became very apparent by experi-

ments made in the spring of last year, on the Brussels and Antwerp Railway. These trials tend to show the propriety of constructing the steam cylinder so that the passages may be as short as possible, or of introducing the double valves, or any other method by which these objects may be attained.

The experiments were conducted, and were under the direction of a commission appointed by the Belgian government, with a view to ascertain the most powerful, and at the same time economical engine of the different makers who had placed engines upon that line.

RESULT OF EXPERIMENTS.

Stephenson's Engine, No. 240, was first attached to a train of 18 wagons, loaded with about 100 tons; it performed the distance from Brussels to Malines in 39 minutes, and from Malines to Brussels in $58\frac{1}{2}$ minutes' under a strong head wind.

Cockerill's Engine, No. 44, attached to the same train, and bearing the same tender as in the preceding trial, performed the distance from Brussels to Malines in 39 minutes—without returning!

The Société de Bruxelles, No. 1, (Livingstone's) under precisely the same circumstances, performed the distance from Brussels to Malines in 34 minutes, and returned from Malines to Brussels in 50 minutes, under a strong head wind. The coke consumed, and water evaporated, were very nearly the same in all the engines. It will therefore be seen, from the foregoing result, that there was a considerable per-centaige in favor of the latter engine.

In our next, we shall present our readers with the elevation of the cylinder.

THE ARIEL AND THE ARCHIMEDES.

To the Editor of the Morning Chronicle.

SIR.—Having noticed the account you were so good as to give of the trials going on at this port between her Majesty's steam-packets and the Archimedes, I beg leave to thank you for so doing; but permit me to rectify an error. The comparison between her Majesty's packet Ariel, and the Archimedes, should have been as follows:—

Ariel . . .	140 tons.	Archimedes . . .	237 tons
Horse-power 70	Horse-power 80		
Beam . . .	16 feet.	Beam . . .	22 feet.
Draught . . .	6 feet.	Draught . . .	10½ feet.

I take the liberty of adding to this information, that I had the opportunity of showing the combination of the steaming and sailing power of the Archimedes, on trial with her Majesty's packet Widgeon, yesterday. She is the fastest packet on this station. Her measurement is as follows:—Widgeon, 164 tons; Horse-power, 20; Beam, 17 feet; Draught, 6½ feet.

The Archimedes had the honor of winning the race to Calais by nine minutes, and on her return to Dover by five minutes. She ran the distance to Calais pier in two hours one minute, and back to Dover in one hour fifty-three minutes, which is the quickest passage on record, under any circumstances.

I shall feel obliged by your inserting this letter in your widely-circulated journal, and have the honor to remain,

Sir, your obedient servant,
F. P. SMITH,
Inventor of the Propeller.

Dover, May 2, 1840.

THE SOAP TRADE.

A new "Soap Act" is now before the House of Commons, and has passed the second reading, which, strange to say, does not contain a single syllable about prohibiting the fraudulent and nefarious system of adulterating soap, practised by unprincipled persons to an incredible extent. It has called forth the following petition from the parish of Marylebone, and which is now in course of signature. We fully concur in the principles of the petition, which is here subjoined:—

"To the Honorable the Commons of the United Kingdom of Great Britain and Ireland in Parliament assembled.

"The Humble Petition of the Undersigned Inhabitants of, &c.

"Showeth,—That your petitioners have learned with the utmost pain and astonishment, that a nefarious practice of adulterating soap has been lately introduced by some of those persons engaged in the trade.

"That soap, being an article of universal consumption, may be deemed an indispensable necessity of life. The adulteration of it must therefore be an evil which calls loudly and imperatively for redress.

"That the adulteration of soap, whilst it operates injuriously to all, cruelly affects the poorer classes, who pay on an average five-pence per pound for an article, one fourth of which may be water, silica, or earthy matter.

"That your petitioners respectfully, but not unjustly, complain that whilst the utmost attention has been bestowed by the legislature upon all those questions relating to the duty upon soap, the interests of those upon whom that duty indirectly but inevitably falls, have been altogether overlooked or forgotten.

"That this disgraceful and dishonest practice prevails at present to an alarming extent, and must continue to increase unless some repressive means be taken to check it, for the generality of consumers cannot counteract a fraud which requires

more than ordinary penetration and experience to discover.

"Wherefore your petitioners humbly entreat your honorable house to insert such provisions in the Soap Act, now under consideration, as will completely and unequivocally suppress a practice ruinous to the industrious retailer, and to the public fraudulently and indefensibly unjust."

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
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Bermuda	Greece	Quebec
Brazils	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Heligoland	St. Lucia
Caracas	Honduras	St. Vincent's
Cartagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
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Cuxhaven		

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"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'clock; if, therefore, our Subscribers do not receive their copies regularly from their Neighbors, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 9, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"A. Dampier," Scarborough.—In this case, the interested parties are partners inter se; it is impossible, therefore, for one to institute proceedings AT LAW against the others, unless the balance due to our correspondent has been expressly stated and admitted. If otherwise, the remedy is IN EQUITY.

"T. Anderson," Taunton.—As this gentleman purposed visiting Town so soon, we advise a personal interview. Several of his questions require further explanation before we can reply to them satisfactorily. The trial alluded to, took place in the month of August 1831.—Verdict for the defendant.

"A. W. Collett," Chelmsford.—This cannot possibly be effected without an Act of Parliament.

"James Bradshaw," Clitheroe.—You have been mis-informed. The reverse of what you state is the case. Had you acted in this matter, without inquiry, you would have placed yourself in an awkward dilemma.

"A Subscriber."—The engravings in the "Mining Journal," and the description of "Carson's Motive Power," were exactly the same as appeared in our Paper of the preceding week. We lent our Contemporary the wood engravings, at his request. Our subscriber is right in saying, that notice should have been taken at the head of the extract, from whence it was derived. It would have been no more than an act of justice.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE
INVENTORS' ADVOCATE,
AND
JOURNAL OF INDUSTRY.

SATURDAY, MAY 9, 1840.

We endeavored to show, in a recent article respecting the existing relations between this country and the Chinese, that the exclusive and insulting system of government adopted by the latter, was a direct violation of the rights of nations, and that the more civilised states of Europe would be consequently justified in combining to compel the Chinese to alter that system. The principle we attempted to establish was this: that nations are amenable to the same understood laws by which individuals are permitted to appropriate land, and that when such property is wasted, in the individual case, or when, in the case of a nation, the peculiar products of the soil of any country are withheld from the rest of the world, the individual and the national conventional rights to the soil cease, and give way to the natural right which every individual possesses to his share of the products of the earth.

This principle may with great propriety be brought to bear on the question that has arisen between this country, and the Neapolitan government, relative to the supply of sulphur. We have given, in another column, a statement of the case from a French paper that is strongly biased in favor of the exclusive monopoly granted to a French company; from which it is manifest, that the effect of the

treaty, however disguised, is to form a combination to check the produce of the sulphur mines, in order to raise the price of the commodity. Any interference with the regular course of trade for the purpose of raising prices, by diminishing the supplies which would otherwise come into the market, is, under all circumstances, objectionable; and it becomes much more so, when the parties interfering to limit the produce of labor are foreigners. Sulphur has become an essential article in many of our manufactures; and our manufacturers have therefore, according to the principle we wish to establish, a natural right to a share of that peculiar mineral product of Sicily. That natural right, no conventional arrangement can destroy, though, for the welfare of society and the preservation of peace among nations, it has been determined that these abstract rights should be placed in abeyance to certain understood laws, that regulate the intercourse of different states with each other.

The question of the monopoly of the sulphur trade, therefore, resolves itself into this: the Neapolitan government having a conventional right to regulate the terms on which foreign nations shall participate in the peculiar produce of Sicily, can it assign this right to others? We conceive that the admission of such a principle would be attended with great inconvenience in regulating the intercourse of nations, and would be productive of serious consequences, as the existing dispute between this country and Naples exemplifies. It would be well if this point were clearly defined and settled; but the question at present at issue does not touch upon the general right of a government to delegate its powers. The question is, whether the authority thus delegated is not a breach of a special agreement. The King of Naples having entered into a commercial treaty with this country, founded on the basis that we should have the same privileges in our trade with Sicily as the most favored nations, he could not, without a manifest breach of faith, have transferred the monopoly of the sulphur trade to the government of any other country. It is attempted to reconcile the assignment of the trade with an observance of the treaty, on the ground that the monopoly has been granted to a company of individuals, and not to any other government; but that agreement is more adapted for discussion among the schoolmen of old, than to be seriously advanced in this practical age.

IMPOSSIBILITY OF GAINING POWER BY CENTRIFUGAL FORCE.

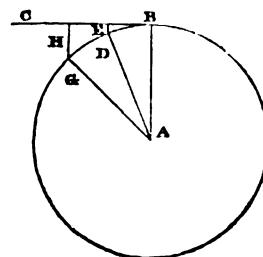
We last week entered at some length into the consideration of Mr. CARSON's centrifugal engine, for the purpose of showing, that, however ingenious in idea, it would be altogether useless in practice. We now propose to resume the subject, in order to prove the impossibility of gaining a working power by any application whatever of the so-called "centrifugal force." We have, indeed, in the case of Mr. CARSON's invention, an example of the necessity of setting this question altogether at rest. We shall consider more particularly the cause of a double velocity producing a quadruple centrifugal power, for it is on this point that the errors arise of supposing it possible to apply the outward pressure of revolving bodies as a motive power. If it can be shown that the tendency of revolving bodies to fly outwards indicates a loss of power, instead of a generation of force, the ground will be entirely removed from those who contend for the practicability of applying centrifugal force as a prime mover of machinery.

It is an admitted law of motion, that the impulse given to all moving bodies is in straight lines, and that they must persevere in that course in which the motion is imparted, unless deflected from it by some other force. It is also well understood, that when any moving body is acted upon by two or more forces, so as to change the direction of its original motion, a loss of power is sustained. For instance, when a ball is struck by two equal forces, acting at right angles to each other, it takes direction exactly between the two, and the result of the motion communicated by these forces is in the same proportion that the diagonal of a square bears to two of its sides. The loss of power, consequent on this action of the two forces, is therefore about three-tenths of the whole. The same effect occurs when motion is changed from a straight line to a curve; and we contend that the loss of power occasioned by moving a body in a circle, is in the proportion that the circumference of the circle bears to the square in which it is described; that is to say, nearly as 14 to 11.

Let us suppose, for example, that motion is given to a body fixed at the circumference of a horizontal wheel, which moves freely on its axis. The impulse of the body will be in a straight line, in a tangent from its point of rest. It will be prevented from taking that direction, by its fastenings to the wheel, and

its motion will, therefore, be bent in a circular course. Its tendency to move in straight lines, however, would not be for one moment overcome by this curvilinear motion; for if the connecting fastenings were at any instant broken, the weight would fly off, not in a curve, but in a straight line, and that straight line a tangent to the circumference at the point where the connection is severed, and not in a direction from the centre of the revolving motion. This latter fact it might be supposed should have been sufficient to set at rest any notion that there is a force acting from the centre, generated by rotary motion. This force, as we previously explained in the 38th number of our journal, proceeds entirely from the circumference, and the pressure outwards which it exerts is caused solely by the constant effort of the moving body to keep in a straight path, from which it is as constantly deflected by the attraction of cohesion among the particles of matter composing the wheel and the fastenings of the weight. As we assume that there is only one acting power exerted on the weight, which power gives it an impulse in a straight line, the force that deflects that motion into a curve must be a resisting force, tending to diminish the quantity of motion communicated. It matters not, in considering this question, whether the motion be communicated at the circumference of the wheel, or by a handle placed near its axis, for the direction of the impulse given to the weight must be in either case the same.

Having thus shown that the force which deflects the weight from its straight course, is a resisting force, which has to be constantly overcome by the moving power, we shall be enabled to explain the cause why the pressure outwards, or, as it is called, the centrifugal force, increases as the squares of the velocities in the same curvature increase. We shall, for this purpose, use Mr. CARSON's own diagram.



Suppose the point B to be a weight fixed to a wheel represented by the circle, and that motion is communicated to it in the direction BC, either by a direct impulse, or by a handle near the centre A. If the velocity be represented by the tangential line BE, the line

E D will represent the amount of the deflection from the course in which the body was impelled when it is made to depart from that course into the curvilinear direction B D. The line E D may therefore be considered to represent at the same time the pressure of the weight outwards, caused by its tendency to move on a straight line, and the amount of power lost in deflecting the motion into a curve. If the velocity be doubled, and the weight be impelled with a force that would carry it to H in the same time, the deflection from the line of motion into the curve will be quadrupled, and in the same proportion will the pressure outwards be increased, and the moving power wasted. Thus it will appear that though a double velocity produces a quadruple centrifugal force, this force cannot be obtained without a loss of power to that extent. The law that a double power will give a double velocity does not obtain in bodies moving in curves, and it is on this point that the notion of those who have attempted to render centrifugal force available as a moving power is founded in error. In giving a double velocity to a weight moving in a circle, the curvature of its path is necessarily doubled at the same time, and a proportional force is requisite to overcome this resistance to straight motion.

We thus perceive that the outward pressure of revolving bodies, instead of being a power generated, is an indication of the power lost in giving the rotary motion, and that this power is lost by acting solely against the resistance of cohesion in the particles of the wheel. When it is attempted to apply the centrifugal force by communication to other bodies, another, and altogether separate resistance arises, from reaction. The effect of reaction under the most favorable circumstances for the moving power may be readily seen by means of a common humming top. A top of that kind will, upon a smooth surface, keep in motion several minutes if it meet with no obstruction but the resistance of the air, but if a small stream of water be poured upon the centre of motion, it will be carried to the circumference and thrown off, and the reaction of the water on the top will bring it to rest in a very short time.

In what manner soever the attempt to apply centrifugal force be made, the loss of motion by reaction will be the same as if a resistance to that amount were applied directly to the circumference of the wheel.

We have thus endeavored to prove that centrifugal force can only be acquired by a loss of power, at least equal to that of the force gained; and that when this force is brought

into action, another and equal loss of motion ensues, from reaction. So far, therefore, from rotary motion generating power, all the centrifugal force which it produces is an absolute loss of motion.

Since the above was written, we have received a communication from Mr. CARSON in reply to our article of last week. In one or two instances he has attributed opinions to us not to be found in that article, and as might naturally be expected, he is not convinced by what he terms our "statements." We think it only fair to give him an opportunity of answering our objections; we must leave the public to decide between us.

NEW INVENTIONS.

CARSON'S NEW MOTIVE-POWER.

(To the Editor of the "Inventors' Advocate.")

SIR,—Having observed that the leading article of the "Inventors' Advocate" of Saturday last was directed against the principle, or the details of an invention for obtaining and applying a power generated by centrifugal force, the particulars of which I published in the 38th No. of your Journal, I hope you will consider it but fair to assign me a portion of your columns, in order that I may refute the arguments, or rather statements (for they are not arguments), therein advanced.

In No. 33 of the "Inventors' Advocate," I observed an article on Centrifugal Force, in which the writer appeared to be quarrelling more with the name, than the thing; contending that it should be called "tangential force." I must confess I consider this latter term a very absurd one; contrary to that used by that correct and beautiful writer, Sir Isaac Newton, as well as to that used by a great number of standing authors; nothing is more distinctly argued by that writer, than that centrifugal force is the direct opposite of gravity; the latter exerting an influence directly to the centre of bodies, and the former an influence directly from the centre of motion.

There are a great number of very simple means of proving by ocular demonstration, to those whom argument and reason will not satisfy, that centrifugal force is a force generated only by rotary motion; that this centrifugal force is always in a direct line from the centre of motion, and that this action is always in proportion to the squares of the velocity. The whirling table of which you speak, will prove this very satisfactorily. If the action of the moveable body on the table be observed when exerting its centrifugal force (or, as you term it, force exerted outwards,) it will be found to be in a direct line from the centre of motion.

Another simple method of proving this is, by an upright spindle, to which a ball may be suspended by a cord. On giving a rotary motion to this spindle, the ball will rise in a right line from the centre of motion, neither going before nor falling behind the motion of the spin-

dle.—Now, if these forces agreed, in reality, with the term which you give them; that is, if they were tangential forces, the ball would quickly go before the motion of the spindle (because these forces, according to your own acknowledgment, increase with the squares of the velocity), winding the cord round the spindle, the ball would be retained close to the spindle, instead of passing out from it.

The confusion, or rather inconsistency throughout the whole of your article must be evident to every reflecting reader. In one place you affirm my invention is founded on the "well-established law" of revolving bodies; in another, you fear it is founded on an unsound basis; yet, not being quite prepared to deny these "well-established laws," you wonder why the centrifugal pump has not answered better as a means of applying centrifugal force!

Having made a great number of experiments with a centrifugal pump, before knowing that such a pump had previously been constructed, I will endeavor to show the real action of the centrifugal pump; comparing it at the same time with my generating engine.

To force a quadruple quantity of fluid, in the same time, through the hollow arms of the centrifugal pump; a quadruple pressure "outwards" as you call it,—is required; to produce a quadruple pressure "outwards," a double velocity is required. Now, by a very plain and universally-acknowledged rule of mechanics, to move a quadruple body with a double velocity, eight times the power is required. Let us now examine the generating engine. To produce a quadruple pressure on the pistons in the cylinders, a double velocity is required (as you acknowledge); to move these pistons through the same space, in the same time, the same quantity of fluid only is required. Now, by a very plain and universally-acknowledged axiom of mechanics, to move the same body with a double velocity, a double power only is required. How very great is the difference of results! In the centrifugal pump, a quadruple effect is produced by employing eight times the power: in the generating-engine a quadruple effect is produced by employing a double power. The whole of the effect of the centrifugal pump is employed in battering the case in which the pump revolves. The whole of the effect of the generating engine is preserved and conveyed to a stationary engine, and employed in giving motion to machinery.

I hope what has been here said, will be sufficient to satisfy every intelligent reader relative to the real action of the centrifugal pump; without the necessity of denying the "well-established laws" on which you say it is founded. Its action is accounted for in a manner which harmonises beautifully with these laws, and with the plain rules of mechanics.

You endeavor to account for the bad success of the centrifugal pump, by supposing a reaction to take place at the point of discharging the fluid body from the hollow arms. This I will show to be absurd, and contrary to the law of the motion of bodies.

Suppose a fly-wheel to be constructed, having hollow arms sufficiently large to allow cannon balls of a given size to pass freely through them; to revolve on a pivot, similar to the centrifugal pump; and to have a hopper placed above the centre of motion, filled with these cannon balls, to keep up a supply to the wheel. Suppose a rotary motion to be given

to this wheel, the cannon balls will be forced "outwards," according to the "well-established law" of revolving bodies, and will be discharged at the extremity of the arms. Now, the extreme point of the hollow arms, and the cannon balls, are moving with precisely the same velocity, and in the same direction, at the moment of separating; consequently cannot produce the slightest reaction against the motion of the wheel; neither towards the centre of motion. To produce a reaction, it would be necessary that the cannon balls should instantly change their motion to an opposite direction, without any apparent cause; this is absurd, and contrary to the law of the motion of bodies. To prove this point with fluid bodies, I made a great number of experiments with a small centrifugal pump, having a tube with an elbow joint at a right angle, with a line from the centre of motion. On presenting the mouth of this tube in the direction of motion, and afterwards in the opposite direction, repeating the experiment a great number of times, I found the same power produce the same velocity, and discharge precisely the same quantity of fluid.

Let us return again for a moment to the fly-wheel. Suppose this fly-wheel to revolve with a double velocity, a quadruple pressure "outwards" would be produced; the balls would travel "outwards" with a quadruple velocity; and would discharge a quadruple number in the same time. Now, suppose this fly-wheel to be revolving in a case; what would be the effect of discharging this quadruple quantity of balls moving with a double velocity? Would it not be in battering a quadruple number of holes through a double thickness of a case? Is this the mode in which you would apply centrifugal force!!!

On the accumulating of power in a fly-wheel, your statements are also exceedingly fallacious. Suppose the hollow arms of the wheel, which I have just been describing, were charged with cannon balls; and had pistons placed in the extreme point of these arms, retained in their places by springs; on giving a rapid rotary motion to this fly-wheel, an immense centrifugal pressure would be produced, acting on the pistons, and this action would be direct from the centre of motion, but as long as there is no discharge of the balls, the fly-wheel revolves, as if it were a solid fly-wheel of the same weight; the centrifugal pressure on the pistons having no effect on the rotary motion whatever.

Knowing your space to be very valuable, I shall extend my present observations no further. At an early period, I purpose going more fully into the details of my invention, the merits of which I am *fully* prepared to substantiate, having tested them all by *actual experiment*.

I am, Mr. Editor,
Your most obedient servant, and well-wisher,
S. CARSON.

Thursday, May 7, 1840.

PROCESS OF GILDING BY GALVANIC ACTION.

The theory of electro-chemistry, which has added so materially to the abstract sciences, has also been applied to manufactures. A long time ago M. Delarive conceived that the decomposing effects of the electric current, when applied to a solution of gold, might, by precipitating the gold on an article to be gilded, be substituted for mercury, the use of which is so injurious to workmen. The first attempts, made fifteen years ago, were not successful; but

recent researches in electricity have led to renewed experiments, which have been attended with much success. The process of M. Delarive is very simple. The following is the description of it given by himself in a letter to M. Arago.

He pours a solution of chloride of gold, as nearly neutralised as possible, and very much diluted, into a cylindrical bag made of bladder, which he immerses in a glass jug full of acidulated water. The article to be gilded is put into the solution of gold, and is made to communicate by means of a metal wire, with a plate of zinc immersed in the acidulated water. The zinc and the acid might be put into the bladder, and the solution of gold and the article to be gilded into the jug, with the same effect. In about a minute, the article is taken out of the solution, and dried with a piece of fine linen, and rubbed, and it is found to be slightly covered with gold. After two or three similar immersions, the gold becomes sufficiently thick, and the operation is finished.

Some precautions, however, are necessary. The force of the electrical current should be very weak, and it is necessary to avoid, as much as possible, the disengagement of hydrogen upon the article to be gilded, which would prevent the gold from adhering firmly. It is desirable, therefore, not to put more than a few drops of sulphuric and nitric acids into the water where the zinc is immersed, and not to immerse the plate above a certain depth. Then, as the metal that is put into the solution is more readily acted upon than the gold, the result is that if the part immersed be not completely gilded, the electric current will penetrate those places where the metal is still exposed, and will deposit a coating of gold on them, however elaborate the workmanship may be.

The gilding is at first tarnished, like that on metals gilded with an amalgam of mercury, when they are taken from the fire, but if care be taken to polish it, the gilding becomes as brilliant as if it had been burnished. It is advisable to wash the article in the acidulated water every time it is taken from the solution, and also every time it is immersed in it. The color of the gilding appears to depend on a variety of circumstances: viz., on the quality of the gold dissolved, on the nature of the gilded metal, on the degree of concentration of the solution, and on the polish of the surface. The greatest care should be taken not to let the object to be gilded touch the solution of gold until every thing is ready, so that the electrical current should come into action the moment the article is immersed in the solution; otherwise the direct action of the solution on the surface of the metal, without the presence of the electrical current, would prevent the gold from adhering, especially if the metal to be gilded be silver.

The process of M. Delarive is very economical; all the materials, with the exception of the gold, being cheap, and the quantity of gold requisite for a tolerably good gilding being very trifling. He has succeeded in gilding six silver coffee spoons with a solution of 800 milligrammes of gold. Supposing that all the gold had been used, the quantity would amount to 80 milligrammes for each spoon, the cost of which is about 32 centimes, estimating fine gold at four francs the gramme, (about 15 English grains.) It is true the gilding is not very thick, but it resists the rubbing of the burnisher, and it was unchanged by a temperature of from 300 to 400 degrees (centigrade), which only caused the gold to penetrate more into the surface of the silver.

ELECTRO-MAGNETIC ENGINE.

Our attention has been called to a new motive power in action at the Colosseum in the Regent's Park, which displays considerable ingenuity in the adaptation. The inventor and patentee, Mr. W. H. Taylor, has constructed an apparatus in which a wheel contains in its periphery a number of pieces of soft iron, so arranged that each is successively brought within the influence of a voltaic battery, which by its electro-magnetic influence, converts each (for the instant) into a magnet, and attracts it in the direction of the tangent. The

entire circle is thus moved forward, and the wheel acquires a considerable rapidity; by a very ingenious mechanical contrivance the electro-magnetic influence is withdrawn the moment the attractive power has been removed. A turning lathe is set in operation by the impetus thus obtained, but the force appears to be trifling when subjected to any practical experiment. We could not obtain any mechanical estimate of its power, of the weight which it would raise, or the work it would accomplish in a given time, nor could we learn the cost at which the moving power was obtained—two most essential elements in the calculation of the value of such an invention. In their absence, we must necessarily reserve our opinion of its utility as an "engine" to be employed in mechanical operations.

—Morning Herald.

THE NEW OMNIBUS.

The patent omnibuses are now in rapid progress of completion, and will be ready for public use about the third week in May. They are most splendidly fitted up; indeed, the gilding, painting, and heraldry of the exterior is almost in regal elegance. The windows are of plate glass, and the sashes being covered with velvet, the noise usually complained of in omnibuses is altogether avoided. By the admirable construction of these vehicles, the passengers face the windows, by which means any degree of ventilation can be kept up without the risk of catching cold. Great praise is due to the inventor of these improvements, and that he will reap a golden harvest we doubt not.

To the Editor of the "Inventors' Advocate."

SIR,—In your last number, you mention the name of Colonel Calvert, as a scientific individual. With the independent principles you profess, and in the spirit of your motto, "*Fiat justitia, ruat cælum*," it cannot be your wish to clothe persons of more pretension than merit, with a rank and character which do not belong to them. Confiding myself to these preliminary remarks, I beg to put a few queries, which probably some of your readers will be able to answer.

1.—Is not Crace the real name of the individual whom you designate as Colonel Calvert?

2.—Did he not reside for some years at Rouen, in France, under his assumed name?

3.—In what country, and in what service, did he acquire his military rank?

4.—What are his pretensions to be styled a scientific individual?

If it should prove that the impressions under which these lines are written, is unfounded, I shall be most happy to make the *amende honorable* to the scientific colonel.

I remain, Sir,
Your obedient servant,

ARGUS.

[The writer of the above letter having privately communicated his name and address, a sense of duty to the appeal he makes to the *principles* on which this Journal is conducted, obliges the Proprietors to give it insertion.]

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

The SHOREHAM branch of the London and Brighton railway will be opened on Monday next. Captain Heaviside has resumed his duties as a director.—*Brighton Paper*.

MIDLAND COUNTIES RAILWAY.—On Tuesday last, the line of the Midland Counties Railway from Nottingham and Derby to Leicester, was opened for the conveyance of passengers and parcels.

OPENINGS OF RAILWAYS.—MAY.—Newcastle and North Shields, second line. 4th—York and North Midland, to Burton Salmond Station. 5th—The

Midland Counties, from Nottingham and Derby to Leicester. 11th South Western (throughout), remaining 18 miles between Basingstoke and Winchester; North Midland (throughout), between Derby and Sheffield 40 miles. 10th and 12th—London and Brighton branch, from Brighton to Shoreham, six miles, Preston and Longridge (throughout), 7 miles, for merchandise only.

JUNE 2.—London and Blackwall (throughout); Eastern Counties, to Brentford, 18 miles. 14th—Lancaster and Preston (throughout).

JULY 1st or 2nd.—Preston and Wyre; Hull and Selby; Great Western, to Steventon, to the 52nd mile-stone from London.

AUGUST.—Chester and Birkenhead, and Chester and Crewe.—*Railway Mag.*

PRESTON AND LONGRIDGE RAILWAY.—This line of railway was opened on Monday last, for the conveyance of stone and merchandise. It is a single line only, and about seven miles long, and for the present will be worked by horses.

LLANELLY RAILWAY.—Two splendid locomotive engines, called the *Victoria* and *Albert*, have just been landed on Llanelly Quay, for the railway, and are intended to ply regularly thereon, for the conveyance of goods and passengers. The company have commenced in good earnest to ship coal and culm. The economy which has been adopted throughout on this line, is a good guarantee to the shareholders of the interest taken in the concern by a most efficient board of directors.—*Cambrian.*

NEW SYSTEM OF RAILWAY TRAVELLING.—The model of a locomotive engine, invented by Kilman, was exhibited in the Town Hall, Mansfield, last week, showing a new system of railway travelling, being adapted in cases of lines requiring difficulties in ascents, and curves to be surmounted. The invention, which is on an entirely new principle, is about being patented.

GREAT WESTERN RAILWAY.—Comparative traffic with London and Birmingham Railway, at early periods of opening.—Great Western Railway, opened to Reading, March 30, 1840; traffic, week ending April 12, 1840, £3,248 on 35½ miles; £91 per mile per week.—London and Birmingham, opened to Denbigh Hall from London, 48½ miles, and to Birmingham from Rugby, 30 miles, total 78½ miles, April, 1830; traffic, week ending April 14, 1839, £3,500 on 78½ miles, £44 per mile per week.—week ending August 11, £7,032, being £89 per mile per week! average traffic per week, from April 8, to August 11, £5,752, being £73 per mile per week. By August, 1840, the Great Western will have further opened 17, 11, and 11½ miles—39½; at present open 35; total 75 miles.

RECENT TRAFFIC.

Birmingham—Week ending April 11,	per mile	1840, wholly opened, £120	per week.
Great Western—Week ending April 12, opened less than 1-3rd of its length.— <i>Railway Mag.</i>			

GREENWICH RAILWAY.—We beg to know whether the directors of this company have their eyes open to the following facts, and if they have, whether they have taken, or intend to take, any steps to effect a saving in the extravagant waste of fuel and power? Their ordinary engines, as was proved on Easter Monday, will take twelve omnibuses fully laden with passengers, without any sensible diminution of speed, but these engines usually take only six omnibuses not half full. Query.—Whether it would not be advisable to have engines of half the weight and power, by which a saving of probably £1,000 or £1,500 a year might be made for the benefit of the shareholders?—*Railway Mag.*

LEIPSIC AND DRESDEN, AND OTHER GERMAN RAILWAYS.—The pre-eminent success of the Leipsic and Dresden Railway taken in connection with its importance, and joining the Berlin and Magdeburg Line, is beginning to exert considerable influence upon the railway system throughout the German Empire. This country, next to Belgium, presents the most favorable physical advantages in extensive valleys for development of this great

March in locomotive affairs, and its widely-spread manufacturing population, every day growing into more importance, will be the means of accelerating, and by increase of traffic encouraging, the formation of railway lines wherever a remunerative return for capital can be safely calculated upon. The opening of the Magdeburg Line, from Magdeburg to Leipsic, is fixed for August next. A partial opening will take place in June or July. By this route, all the merchandise from England and Hamburg, destined for the interior of Saxony, will arrive at Leipsic (as a dépôt), and vastly benefit the interests of the Leipsic and Dresden Line.—*Railway Times.*

RAILWAYS IN NORTH CAROLINA, (U. S.)—The *Wilmington Advertiser* expresses much exultation at the final completion of the great railroad running from that city to the Roanoke River. This road is said to be the longest work of the kind in the world, being one hundred and sixty-one miles in length. It appears that only 21½ miles of this road are curved, leaving the unparalleled amount of 138½ miles of straight road, in a total length of 161 miles. One of these straight lines is 47 miles long; others are three, four, six, seven, eight, and fifteen miles in length. Major Gwynn is the engineer, under whose direction the work was constructed. On the 9th ult. the first car passed over the entire length of 161 miles. It arrived at Wilmington from Weldon, at noon on that day, and the occasion was marked by a salute of 161 guns, and other demonstrations of public joy.

COURT OF CHANCERY, WESTMINSTER—WEDNESDAY.

PLAYFAIR V. THE BIRMINGHAM AND BRISTOL RAILWAY COMPANY.

A motion to dissolve an injunction that had been granted to restrain the defendants from proceeding with an action at law, to recover from the plaintiff certain instalments on one hundred shares in the railway undertaking, formerly held by the plaintiff, but which he conceived he had relinquished to the directors of the company, was argued last Friday, when the Lord Chancellor gave the plaintiff the option of paying the amount sought to be recovered by the action into court, otherwise the injunction to be dissolved; and allowed the plaintiff time till this day to make his election.

Mr. BETHELL, counsel for the plaintiff, this morning said he had advised his client, under all the circumstances, to elect to defend the action.

The LORD CHANCELLOR desired the injunction to be dissolved.

JONES V. THE GREAT WESTERN RAILWAY COMPANY.

Mr. WIGRAM and Mr. GREEN supported a motion to restrain the defendants from proceeding with their works through the lands of plaintiff, near Wallingford, in Berkshire, until they submitted to pay him for so much of his land as they used, and also for the injury which their works would do to so much of the plaintiff's land at the other side of their railway as they should not require, according to an agreement into which the parties had entered. The question arose on the proper construction of this agreement, and upon several sections of the act incorporating the company.

Mr. JACOB, Mr. TURNER, and Mr. STEVENS opposed the motion, contending that no injury would be done to the plaintiff's land not taken by the company, as they would give him a facility of communicating with that part of his property as good as he had before. They were willing to pay for what they used of his land.

The LORD CHANCELLOR was of opinion that the agreement applied to the damage done by the railway to the plaintiff's remaining property, as well as to compensation for as much as the company required.

It was agreed between the counsel, that their clients should try, by their respective surveyors, or by other referees, to ascertain the amount of damage

which the plaintiff would sustain by the railway, and if they could not succeed privately, then a jury should inquire into the matter. The amount of compensation for such damage to be paid plaintiff in addition to the price of the land taken by the company.

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING MAY 11TH, 1840.

Monday.	Royal Geographical Society...9 P. M.
Tuesday.	Medical Society.....8 P. M.
	Medico Chirurgical Society ..8½ P. M.
	Instit. of Civil Engineers...8 P. M.
	Zoological Society.....8½ P. M.
	Meteorological Society.....8 P. M.
	Society of Arts (illustr.)...8 P. M.
Wednesday.	Society of Arts.....7½ P. M.
	Geological Society.....8½ P. M.
	Medico Botanical Society.....8 P. M.
	Graphic Society.....8 P. M.
Thursday.	Royal Society.....8½ P. M.
	Royal Society of Antiquaries..8 P. M.
	Royal Society of Literature....4 P. M.
	Royal Institution.....8½ P. M.
	Botanical Society.....8 P. M.
Saturday.	Mathematical Society.....8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

NUMISMATIC SOCIETY.

April 30th. Edward Hawkins, Esq., President, in the Chair.

The Society held its monthly meeting in the rooms of the Astronomical Society, Somerset House.

A paper from Roach Smith, Esq., was read by J. Y. Akerman, Esq., one of the secretaries, consisting of translation from the memoir of M. Lenormant on the Celtiberian and Turditan legends of the Spanish coins, which has appeared in the *Revue Numismatique*, proposing various new readings of the legends of these medals from comparison with the Greek and Phenician, on account of the unsatisfactory readings of Gesenius, Velasquez, Florez, and others, and classing them into the towns deriving their name from the Greek, and those of native appellation. Two diagrams were exhibited of the names of towns, and an alphabet of the inscriptions compared with the Greek and Phenician.

M. le Baron de Porquet, and William Taylor Shortt, Esq., were elected members of the Society.

THE ART-UNION OF LONDON.

The fourth annual meeting of this society, whose object is "to cultivate and extend the love of the Fine Arts, and to give encouragement to artists beyond that at present afforded by the patronage of individuals," was held on Monday, April 27th, at Mr. Rainy's Gallery, in Regent-street. The Marquis of Northampton presided, and George Godwin, jun., Esq., F. R. S., at the request of the committee, officiated as hon. sec. Benjamin Bond Cabbell, Esq., F. R. S., Mr. Alderman Wilson, Dr. Dickson, F. L. S., Chas. Palmer Dimond, Esq., and others, took part in the proceedings.

The report of the committee showed that the number of subscribers was 1,970, and that the total amount subscribed was £2,250. Of this, the sum of £1,400 was set apart by the committee for the purchase of forty-two works of art, in sums varying from £200 to £10. The distribution having been made by lot, the scrutineers announced the names of the prize-holders. Thanks were voted to the committee, to Mr. Rainy for the use of his gallery, Mr. Godwin, and to the Marquis of Northampton for his able conduct in the chair.

In addition to the chance of gaining a work of art, each annual subscriber of one guinea to this association receives an impression from an engraving of one of the pictures bought by the prize-holders, the expense of which is defrayed from the general fund.

URANIAN SOCIETY.

Dr. M'Intyre, in the Chair.

The following paper was read on "Kepler's Law," communicated by J. Utting, Esq., of Lynn Regis, Norfolk.

The following analogy discovered by Kepler, viz.:—"That the periodic times of the planets are proportioned to the cubes of their mean distance," is given in most treatises on astronomy, but no attempt has been made to explain the above law, or from what principle it emanates.

On comparing analogies in the planetary motions, the author finds that the areas generated by the radius vectors of the planets' orbits, in their periods

EXAMPLE.—Given the earth's sidereal period = 31558152 secs., Jupiter's period = 374335354 secs., and the Earth's distance from the Sun = 94 millions of miles; to find the distance of Jupiter from the Sun.

Earth's periodic time = 31558152 secs. or units of space measured on the circumference of the Earth's orbit	LOG.
3 · 14159 ÷	7 · 4991116
	· 4971499

Diameter of orbit	7 · 0019617
	2

Square of diameter	14 · 0039234
X · 78539 for area of orbit	1 · 8950899
	—

Area of the Earth's orbit	13 · 8990133
	—

Jupiter's periodic time = 374335354 secs., or units of space measured on the circumference of Jupiter's orbit	8 · 5732808
3 · 14159 ÷	· 4971499
	—

Diameter of orbit	8 · 0761109
	2

Square of diameter	16 · 1522218
X · 78539 for area of orbit	1 · 8950899
	—

Area of Jupiter's orbit	16 · 0473117
	—

Diameter of the Earth's orbit = 188,000,000 miles	8 · 2741578
	3

Cube of diameter	24 · 8224734
X · 52359 for capacity of sphere	1 · 7189986
	—

Volume or capacity of the sphere of the Earth's orbit	24 · 5414720
	—

LOG.	LOG.	LOG.	LOG.
Whence : 13 · 8990133 : 16 · 0473117 : 24 · 5414720 : Jupiter's distance.	16 · 0473117	24 · 5414720	Jupiter's distance.
Capacity of the Earth's orbit.....	24 · 5414720		

Area of the plane of ditto :	40 · 5867837
	13 · 8990133

Capacity of Jupiter's orbit.....	26 · 6897704
X · 52359 for sphere	1 · 7189986

Cube of diameter of Jupiter's orbit..	✓ 26 · 9707718
---------------------------------------	----------------

Diameter of Jupiter's orbit	8 · 9902573	= 977,816,530 miles.
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Consequently 977816530 = 488,908,263 miles, the distance of Jupiter from the Sun.

2

From the above computation, it will readily be seen that the factors · 78539 and · 52359, &c., cancel each other.

Whence, the squares of the periodic times are as the cubes of the mean distances.

The above examples are, however, not strictly correct, as the computations are made on the hypothesis of the planetary orbits being circles, whereas they are in reality ellipses, and the volumes or capacities of the orbits are not spheres but spheroids, equal to the square of the minor, multiplied by the major axis X 52359, &c.

BY KEPLER'S LAW.

DAYS.	DAYS.	MILES.	MILES.
As 365 · 2563835 ² , is to 4332 · 5851167 ² ,—so is 94,000,000 ³ , to 488,908,263 ³ ,			
the distance of Jupiter from the Sun, the same as by the above computation.			

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At an ordinary meeting of the members of this Society, held on Monday evening, April 27th, at their rooms in Lower Grosvenor-street, the Marquis

of Northampton in the chair, a variety of donations were announced, and letters from foreign members read. Signor Gasparo Fossati, architect to the Emperor of Russia, was elected a corresponding member. By a letter received from Signor Bolzato, it appeared that Signor Fossati was now engaged at

Constantinople in the erection of a palace for the Russian ambassador there.

Mr. George Alexander read an Essay on the classification of Egyptian architecture, and contradicted some opinions which popularly prevail, touching the extreme antiquity of all Egyptian buildings. Many of these structures, the remains of which are best known, were not erected until after the Roman invasion. The paper further went to show what changes took place under the different dynasties, and thence to deduce rules for ascertaining the age of Egyptian buildings from their appearance.

Mr. George Godwin, jun., communicated a paper, in reply to a question raised some time since by Sir Gardner Wilkinson, concerning the appearance of the vertical line in architecture at a much earlier period than is usually ascribed to its introduction—namely, in the buildings of ancient Rome. According to Mr. Godwin's views, it may be deduced clearly from the first use of the arch as a feature in construction, and the consequent employment of columns, simply as adventitious decorations. Thanks were voted to Mr. Alexander and Mr. Godwin, and the meeting adjourned.

ROYAL INSTITUTION.

At one of the recent Friday evening meetings, Mr. W. R. Grove delivered a lecture "On Voltaic Reaction, or the Phenomenon usually termed Polarization," and at the conclusion exhibited the effects produced by his new and surprising voltaic combination. The following is an account of the performances of the powerful batteries constructed by Measrs. Watkins and Hill, of Charing Cross.*

Mr. Grove had his batteries arranged in two forms; one developed the condition of intensity, while the other exhibited quantity, and from the effects observed it was manifest that in both cases a most judicious arrangement had been adopted. The quantity battery consisted of 40 pairs of 4-inch, square platinum plates, with double amalgamated zinc plates, with porous cells and porcelain troughs, arranged in series of eight 5 pairs of plates. Nitric acid being in contact with platinum, and diluted sulphuric acid in contact with the amalgamated zinc, the platinum and amalgamated zinc plates were arranged in their proper cells, and supplied with acid some time previous to the lecture, and it was noticed that no action was visible; indeed, all apparently was in perfect repose for three hours, until the moment of completing the circuit, by joining the positive and negative ends of the battery by a conducting substance. The wonderful energy of the arrangement then developed itself. In the first instance, with the quantity arrangement of eight 5 pairs, each 4 inches square, when the circuit was completed through a large Volta meter prepared for the occasion, 110 cubic inches per minute of mixed gases were evolved by the decomposition of the water. We believe this is the first instance wherein so large a quantity of gas has been produced by voltaic action in the short period of one minute. The heating effects of this quantity battery were far above that obtained by any previous voltaic combination, for it fused a thick iron wire 3.20ths of an inch diameter, and 10 inches long, and a slip of thick platinum foil, 12 inches long and 1 inch in breadth was rendered white hot.

Mr. Grove then referred to his intensity battery, which only covered a square surface of 16 inches on each side. The cells were 4 inches high, and consisted of 40 pairs of platinum plates, 2 inches by 3 inches, with double amalgamated zincs. With this comparatively small intensity battery, an arc of flame between charcoal points was observed, one inch and a quarter long, and fused a large and thick iron wire. Mr. Faraday having lent his pocket-knife to the lecturer, the large blade was instantly deflagrated, exhibiting a splendid shower of scintillations. Large masses of zinc, copper, soft iron, &c., were then submitted to the action of the battery, and most splendid series of combustions were the

* This account is extracted from Annals of Electricity, April, 1840.

consequence, the color of the light being dependant upon the metal employed.

[In our opinion, this battery of Mr. Grove's is the best that has been constructed, as regards power for either *chemical* or *motor* action. The surface of zinc, acted on by the diluted sulphuric acid, giving eight or ten times the quantity of electricity than even that which has been lately recommended by Mr. Smeet.]

THE THEATRES.

"See that the players be well used."—*Hamlet*.

"Nothing extenuate, nor aught set down in malice."—*Othello*.

A very heavy pressure of other interesting matter, precludes the possibility of our entering at large on matters theatrical, even if we were so disposed; but the truth is, the dramatic horizon is just now sadly clouded,—each manager, who can so order it, being anxious to wind up his campaign as soon as possible, and bring his season to a close. The weather is now so fine, and the beauties of the country are so attractive, that a walk or drive possesses more attraction than do all the theatres put together. This cannot be a matter of wonder, with those who know the true meaning of the word 'enjoyment'.

HER MAJESTY'S THEATRE.—The discord that has been carried on during the week, by M. LAPORTE and Signor TAMBURINI, has been the all absorbing topic in the fashionable circles. The "grievance" is now amicably settled and harmony has again resumed her "gentle sway." Whether strict justice has been done by those who represented the public in this quarrel, we shall not now stop to inquire; suffice it to say, they have gained their object, and Signor TAMBURINI, their "idol," has been recalled. The matter was referred to the arbitration of the Duke of Beaufort, and Count d'Orsay. The Duke, however, unconscious of the honor which had been conferred upon him, had left town for Newmarket; the solution of the problem was left therefore entirely to the Count, the result of whose negotiations has effected a complete reconciliation between the singer and the manager. On Tuesday last, Rossini's *Otello* was represented,—TAMBURINI taking the character of *Iago*. On his appearance, he was received with loud plaudits from all parts of the theatre, which continued for several minutes; and we had the foolish mummery of wreaths thrown from the upper regions upon the stage, which were picked up, one after another, by the object of this homage, with theatrical gestures of thanks. We cannot but wonder at an English audience tolerating such tom-foolery on the part of a few people connected with the performers, who presume to put themselves forward so obtrusively.

Otello has been so often represented, and by the same principal performers, that there is really nothing to be said about it now-a-days. The only novelty in the cast was RICCIARDI, as *Roderigo*, which he performed very satisfactorily, sustaining his part in the fine concerted pieces, in which this opera abounds, with great taste and delicacy. As a *secondo tenore*, RICCIARDI is a valuable acquisition to the theatre. GRISI's *Desdemona* was charming, exquisitely beautiful as a vocal performance, and, as a piece of acting, realising SHAKESPEARE's own conception of the character. We cannot say as much for the *Othello*. RUBINI has feeling and passion only when he is in the very act of singing; and his vehement bursts of *vocal* passion contrast most oddly with the strange nonchalance of his manner when not under the immediate influence of musical inspiration. *Iago* is a poor part, even musically speaking, and, as a character, it is quite insipid, without a single feature of SHAKESPEARE's original; but TAMBURINI made the most of it. The scene in which *Iago* works upon *Othello's* jealous nature (the only effective passage belonging to the part) was given with considerable power. LABLACHE throws much

dignity and feeling into the character of *Desdemona's* father.

After the Opera, TAMBURINI was called for individually, in order to receive a reiterated expression of public approbation. We do him no more than an act of simple justice, to say he looked "unutterable things."

Mdlle. CERITO repeated the ballet in which she appeared on Saturday, and again received considerable applause. Mdlle. CERITO is a beautiful girl, not so tall as either TAGLIONI, F. ELLSLE, or DUVERNAU, but her figure is classically symmetrical, and she possesses a beauty of form rarely to be met with in premières danseuses. Her manner of dancing partakes of both the style of TAGLIONI and Fanny ELLSLE, but she is withal singularly bold, graceful, and buoyant: of the former, she reminds us by her graceful activity; of the latter, by her precision and rapidity.

The house was exceedingly crowded in every part. Her MAJESTY was present, and there was a numerous party in the QUEEN DOWAGER's box.

THE PRINCE'S THEATRE.—The opera of *Don Juan*, or *Giovanni*, was produced for the second time on Wednesday night, and performed very creditably. The *Don Juan* of Herr POCK was a spirited and vigorous piece of acting and singing, but destitute of that ease and grace which belong to their brethren of a "sunnier clime." In the duet of "Batti Batti," of the Italian libretto, he was very successful. *Zerlina*, as personated by Madame SCHUMANN, was charming, and the two beautiful airs "Batti Batti," and "Vedrai carino," were deliciously sung. Her acting and singing throughout, were really excellent, the former was peculiarly naïve. Madame SCHWARZBOCK had the arduous part assigned her of *Donna Anna*, which, with a few exceptions, was both musically and dramatically performed. She introduced in the last scene an aria of great brilliancy in its composition, and great difficulty in its execution, but in which she acquitted herself to admiration. Madame SEELAND, a new *debutante*, sustained the character of *Donna Elvira*; her singing evinced considerable force and expression, and in less arduous parts, she will no doubt appear to greater advantage. Herr SCHUMANN (his second appearance) made a respectable *Commendatore*; in the last scene, in particular, he created a very favorable impression. *Leporello*, by Herr KEGE, is not without merit. He possesses some humor and vivacity, but having in our mind's eye LABLACHE in the same character, we are rather fastidious. The most decidedly commendable parts of this effort of the German Company, was in the concerted parts of the opera; there we found an harmonious combination of assured nicey and power; every one sung as if the success of the opera depended upon him. This is as it should be. The house was well attended.

ASTLEY'S.—In addition to the popular entertainments produced last week, a novelty on the subject of the *Chinese War* has been introduced. It is apropos to the present times, and creates roars of laughter. The house continues to be well filled.

THEATRE ROYAL, EDINBURGH.—Our good friend, PARTRIDGE, the idol of Auld Reekie, takes his benefit on Monday, under the most distinguished patronage. He will sustain the character of *Julian St. Pierre*, in Knowles' Comedy of *The Wife*, and *Oclavia* in *The Mountaineers*. He will be ably supported by Mr. MURRAY, Mr. MACKAY, Miss STANLEY, a very lovely actress, Miss J. CRUISE, Miss NEWTON, and other popular favorites. Need we say that we wish him "a bumper?"

MISS KELLY'S NEW THEATRE IN DEAN-STREET, SOHO.—This *bijou* of a theatre, built under the able direction of Miss Kelly, and now upon the verge of completion, is situated at the back of Miss Kelly's private dwelling-house, No. 73, Dean-street, Soho. The theatre itself, though upon a small scale, possesses many advantages and conveniences unknown to larger theatres. The stage is constructed upon an entirely new plan, the whole of which can, at the

touch of the prompter's bell, be lowered with the greatest safety to depths almost inaccessible to the imagination, and by the same talismanic tingle, may be raised to the view of the audience. There are two tiers of boxes, many of them private loges, taken for the season by Miss Kelly's patrons. The pit is so constructed as to contain upwards of 500 persons, but there is no gallery, so the "gods" must humble themselves, and descend to the charms below. Miss Kelly announced her intention to open on the 18th of the present month, and in her announcement says she has a "small" but "talented" company.—*Abridged from the Observer*.

ROSSINI AT NAPLES.—This once brilliant composer is still at Naples, where he recently received from one of his countrymen a very high public compliment, but which carried, like the serpent, a sting in its tail of more than common pungency. The anecdote is worth relating. A very celebrated improvisatore was pronouncing before a crowded assemblage a growing eulogium upon the genius of illustrious Neapolitans now no more. He preceded his panegyric on each, with a description of his tomb, which appeared, from the warmth and eloquence of the improvisatore, to rise before the eyes of the poet as he spoke. After passing several in review, "And here," continued the orator, "here stands the tomb of one, dear to Apollo, the lamented Rossini." "How," exclaimed one of the assembly, "Rossini, he is not dead, he is even present!" "No," said the poet, "his body, his earthly frame is indeed amongst us; but his immortal part, his genius, lies dormant in the tomb." The acclamations which followed this sally of the improvisatore, are described as loud enough to have awakened the Seven Sleepers, whether they were sufficient to rouse the slumbering spirit of the Gran Maestro from its torpor yet remains to be seen.—*Paris Print*.

Mademoiselle Taglioni arrived at Vienna about the middle of April, and made her first appearance on the 20th. The theatre was crowded to suffocation, and her reception was most enthusiastic. She was called forward by the audience no less than 15 times in the course of the evening. Her engagement is for 10 nights only, and will conclude with her benefit on the 11th of May; on the 12th she leaves Vienna and proceeds direct to London, so that we may hope to be delighted with her fairy-fitting vission at the Opera soon after the 20th. During her stay in Vienna she and M. Taglioni, her father, were honored by an invitation to dinner from the Prince and Princess Metternich, and were received by their Highnesses most graciously.

Interesting Bronze Statue recently acquired by the British Museum.—The Museum we understand has recently acquired from Paris a statue in bronze, of the size of life, which formed part of the collection of the late M. J. F. Miraut. It represents a young man standing naked, with his head turned to the right, the arms slightly bent, and the left leg inclined in the attitude of repose. His head is bound with a twisted fillet, and his hair, which is very curled, falls down almost upon his neck. The tunica abulguea of the eyes is represented by small thin inlaid plates of silver, and the nipples of the breast are incrusted with copper. The great peculiarity of this bronze, and which renders it interesting as a work of ancient art, is the manner in which it has been made: for it has been cast in nine pieces, the thickness of each, a line, and these pieces have been afterwards hammered together with admirable precision. The places where they unite are only perceptible, owing to the fracture of the arms and legs; or when a candle is introduced into the interior of the statue. This mode of course superseded the necessity and weight of a core, and the present statue, although the size of life, weighed before its restoration only sixty-nine pounds: which confirms the account of Pausanias, that Milo carried his own statue in the *Altis of Olympia*. The invention of this art ascends to the epoch of the twenty-ninth Olympiad, in the seventh century before the Christian

era, long prior to the execution of the present specimen, which cannot possibly be deemed more ancient than two centuries before Christ, if so old. This mode of uniting the pieces was called by the Greeks *sphurēlaton*. The statue is mentioned as having been found at Zifteh, the lower part of the legs were immediately melted by the Arabs, and are now restored together with the plinth, by the joint efforts of M. Hussen and Delafontaine. It is more interesting from its material and mode of fabric than its excellence, and belongs to the history rather than the choice specimens of ancient art. It is said to have cost £500. It is supposed to be a personification of Eros Apteros—"The Wingless Love."

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VENTILATION OF MINES IN GERMANY.

The mines of Germany are numerous, and are situated in all parts of that empire, but the most deservedly celebrated are those of Saxony. These mines are in the midst of rocky mountains of the primitive formation, consisting of that species of rock called by geologists, gneiss. Of these mines, the most distinguished are those of Freyburgh and of Kühbachacht, whence ore, containing equal quantities of silver and lead, is extracted. The first of these mines is about 400 feet deep, and the second is upwards of 500 feet below the surface. The workings are carried on in a regular manner, as the direction of the veins and the amount of produce are very well known. Germany, which has taught France the art of mining, and which has furnished miners even to England, has not lost the tradition of the excellent methods of working which obtained for her engineers their great reputation some centuries ago. They have even improved upon the ancient method, by adding to it the improvements of modern times.

The greater part of the new improvements in mining have originated with the Germans; but, unfortunately for them, the kind of insulation in which they are placed, by difference of language and other circumstances, has often prevented them from improving machines and modes of working that they were the first to introduce, and kept them ignorant of the improvements in their inventions made in other countries. The mining engineers of Germany have also endeavored to bring into practical operation a number of plans that the miners of other countries have neglected; and they have frequently succeeded. But that which principally distinguishes the German miners is, that they are almost always unfeathered by routine practices, and that they have preferred endeavoring to apply any means to produce a given end than to make the end in view subservient to the means of obtaining it.

Of late years, a new engine for ventilating mines has been adopted at Freyburgh, and in a number of other mines; it is the ventilator by centrifugal force. Ventilation of mines may be produced, either by creating a draught through the passages, or by forcing in a quantity of pure air. The effects of

the above named machine are owing, as its name imports, to centrifugal force, and become apparent as soon as it is set in motion. The apparatus consists of two plain wheels, placed one above the other, but kept a little apart by divisions which are placed from the centre to the circumference. These partitions are placed horizontally, and a rotary motion is communicated to them either by a steam-engine or by any other motive power. The middle of each partition has a round hole in it. When in action, the air which enters into the machine by its centre, is soon carried by the rotary motion to the circumference, whence it escapes. If it be required to draw the air from the mine, it is evident that the shaft of the mine must be made to communicate by an air pipe with the centre of the ventilator. As soon as the wheel begins to turn round, the air within it will be expelled at the circumference, and that air can only be replaced by air from the pipe and the shaft, which will therefore be drawn out to supply the engine. If it be required to apply the ventilator as a blowing ventilator, it will be necessary to leave the centre of the drum open to the air, and to receive the air which is expelled at the circumference into a pipe that surrounds it. In either case, the volume of air thrown out by this machine is nearly proportional to the angular velocity of rotation. Thus, a ventilator which expels a cubic foot of air per second, with any given velocity, will expel double or triple the quantity when the velocity is doubled or tripled. This is a valuable property of the engine, for it shows in an extremely simple manner what are the effects of the variations in the velocity of the engine upon the quantity of air expelled.

The centrifugal ventilator was, many years since, alluded to by Terai, and afterwards by Desaguliers; but it was the French engineer, Dubuat, who first attempted to apply the mathematical theory. He proposed to use it for the three following purposes: to ventilate the wards of hospitals; to produce a draught in chimneys; and to ventilate the galleries of mines. It is of the last-named application of the engine in Germany that we now treat.

The most complete account of the theory of this machine is to be found in the memoir of M. Combes, entitled the "Theory of Ventilation." The following are the principal remarks he makes on the employment of the engine in the mines of Germany:—

"One of the most useful properties of this machine is the facility of regulating its action according to the required ventilation. There is nothing, in short, to prevent the velocity from being changed every instant; and, consequently, the quantity of air thrown out. The resistance by friction is very

slight and nearly imperceptible, so that an almost inappreciable quantity of the motive power is lost in keeping it in action. The velocity may, therefore, be increased to an extremely rapid rate, without losing any considerable quantity of power. This modification of the velocity may in practice be effected at will, for the movement is transmitted to the ventilator by a band that passes over cylinders of different diameters. In short, this machine is of the most simple construction, and little liable to get out of order."

This machine presents an immense improvement upon the former system of ventilating by heat. The dangers and inconvenience of ventilating mines by fires are very great, and they are becoming so sensibly felt, that ventilation by heat will be altogether abolished in modern workings. Already have air-pumps been substituted for fires in Belgium, and similar pumps and some ventilators have been established in France.

On a comparison between the effects of ventilators and air pumps, the preference has generally been given to the former, when the object was to substitute for the mode of ventilating by fires some machine more certain, and of very simple construction. Besides, the efficiency of a pump depends on the condition of the suckers, and it is well-known how very uncertain the action of the valves is, and how much the working of the pump depends upon them. The apparatus which has no suckers, nor valves, therefore, is preferred by engineers. If the examination of the construction of an apparatus can serve as a guide, it is evident that ventilators are the most perfect machines that can be employed in purifying the air in mines. But a serious objection has been raised against ventilators, which we must not pass unnoticed. It has been said, that the volume of air which passes through one of these engines is never certain, and that the unobstructed openings for the entrance and departure of the air can never show in any direct manner the volume of air thrown out. In an air-pump on the contrary, it is said, the piston exerts a direct pressure, and that the force of the pressure cannot fail to be transmitted to the volumes of air on which they act. When it is requisite to excite a rapid ventilating-current, therefore, at the instant when some extraordinary circumstance occurs, it appears that the action of the piston of a pump can be more depended on than the increase of the velocity of a ventilator. But it may be answered, that the action of ventilators depends on infallible physical laws; that in order to increase the quantity of air thrown out, it is only necessary to know the diameter of the orifice, and the velocity of the current through that orifice; that the first of these may be easily measured, and that the latter may be ascertained by the delicate instrument which

M. Combes has described in the first volume of the Annals of Mines, for 1838.

We see, therefore, that ventilators will bear a comparison with air pumps in reference to their mechanical and practical effects. They have evidently the advantage in simplicity of construction, and in the moderate expense at which they can be made. They have also the advantage as regards the waste of moving power. If we only bear in mind their immense superiority over fires, as a means of ventilation, we shall be convinced that their adoption is capable of producing the greatest benefit in our coal-pits.—*L'Emancipation*.

[It will be perceived that the principle of action of this ventilating machine is exactly similar to that of the centrifugal pump, to which we have had occasion to advert in our recent articles on the applicability of centrifugal force. The success which is said to attend the application of the centrifugal ventilation does not in the least militate against the arguments advanced in those articles; it merely shows that the pressure outwards, obtained by rotary motion, may be in some cases advantageously employed in giving direction to the moving power, and not that it is the moving power itself.]

A NEW METHOD OF TESTING THE QUANTITY OF CARBON IN CAST IRON AND STEEL.

The quantity of carbon contained in cast iron, may be very readily ascertained, and with great exactness, by the following method. The quantity to be operated on should be about five grammes, (a gramme is equal to 15*½* English grains) which must be reduced to filings if the metal be soft, or pulverised in a mortar if it be brittle. This powder, or filings, must be mixed with sixty or eighty grammes of chromate of lead, previously melted. About the third or fourth part of this mixture is then taken away, and to the remaining quantity is added about five grammes of chloride of potash, which contains nearly the quantity of oxygen necessary to change the iron into a per-oxide. The triple mixture is then put into a glass tube, similar to those used for organic analyses, but much shorter. Upon it is placed the portion of the mixture of the metal and chromate of lead that was at first taken away. The common apparatus of Liebig, for the analysis of organic substances, is then fitted to the tube. That portion of the tube which contains the mixture without chloride, is heated, and when it becomes red hot, the part of the tube which contains the chloride must be heated, and the heat increased until all the gas has been disengaged. In this manner, the combustion of the cast iron is almost completed in the first instance by the oxygen of the chloride, and a very small quantity of the gas escapes through the tube. Afterwards, when the temperature is raised higher, the combustion is entirely completed by the chromate of lead, which in melting, oxidizes the last portion of the metal. The tube should be surrounded by a sheet of copper, because it is necessary at the last to excite a great heat for the perfect fusion of the chromate of lead. The oxidation of the cast iron is thus rendered complete, which may be ascertained by pounding, after combustion, the substance contained in the tube, when it will be found that not one particle of it is attracted by the magnet. The analysis is made so easily, that it only requires half an hour to complete the whole. We may judge of the perfect agreement of the results by the three following analyses of the same specimen of grey cast iron, produced by the hot blast. Five grammes yielded in one analysis 0.582 of carbonic acid; in the second 0.585; and in the third 0.588. When the metal contains sul-

phur, the sulphur remains in the tube, in the state of sulphate of lead, and not a trace of sulphuric acid is perceived. When chromate of lead alone is employed, all the carbon is not liberated, for the chromate, on losing a great quantity of oxygen, becomes less fusible, and the oxidation penetrates with difficulty to the centre of the grains of the metal.—*Annales de Chimie*.

BRAZILIAN GOLD MINES.

The English Companies working Brazilian Gold Mines are six in number. The most important is the mine of Gongo-socco. During my sojourn of six weeks in that country, I have obtained exact information as to the origin, the improvements, the administration, and the prospects of that establishment; I will restrict myself to giving an account of what I have seen and ascertained on this subject. The time of the discovery of the mine of Gongo-socco is unknown. In the native language, the literal meaning of the word Gongo-socco is Cavern of Thieves. According to tradition, numerous gangs of revolted negroes infested the country about a century ago, and lodged their booty in the garden of Casa Grande, which is now the residence of the Director of the Company.

The considerable profits made by the Faiscadores*, by working the soil of the banks of the torrent of Soco gave a reputation of richness to that place. Nevertheless, Gongo-socco was so little known towards the end of the last century, that it was not mentioned in any of the maps of the province. Camaza, who was its owner, valued it so little, that he sold Gongo to Alvez da Cunsea, for the moderate sum of £800 sterling. In 1817, a short time before the death of José Alvez da Cunsea, two negroes, in ascending the stream of the Gongo, discovered a large fragment of nearly pure gold, weighing five pounds, encased in a ferruginous micaeous stone. João Baptista Continho, since Baron of Catas Altas, who had successively married two daughters of José Alvez, superintended the property of his father-in-law, who was at the same time his brother-in-law, having obtained the Baron's sister in second marriage. He kept secret the discovery of the two negroes, and supposing that the fragment of gold had been detached from the upper part of the mount, he made a thorough search, and discovered the auriferous surface of the actual Gongo mine. José Alvez died in 1818, and the Baron of Catas Altas, from superintendent of this mine, became, by usurpation, its owner, disposing of its income without giving any account to his co-heirs. During eight years he made by the Brazilian method, *talho aberto*,† immense sums of money, it is said to the amount of several millions of crusades. During two years, he extracted on an average 15 pounds of gold per day, (£670).

The Baron, supposing the mine of Gongo-socco exhausted, sold it to the English Imperial Brazilian Mining Association, for the sum of £90,000. This company was formed in the year 1824, with a capital of £350,000, divided into 10,000 shares, of £35 each.

The property of Gongo, 3*½* miles in breadth, and 4*½* miles in length, is situated in a beautiful valley, through which the torrent of Soco runs. The valley is bordered by hills, covered with forests and

* Faiscadores, is the name given to those employed in washing auriferous substances on the banks or beds of streams or torrents. This work is not lucrative, and fortunes are seldom made by those employed in it. Faiscadero takes its name from *Faisca*, spark.

† *Talho aberto* (*mineracess de talho aberto*) work in the open air; the work consists in cutting down the hills, till arriving at the gold they contain. Nothing can have a more desolate aspect than these hills cut up in every way by the works of the miner.

pasture ground. The Imperial Brazilian Mining Association, previous to making this acquisition, was in possession of the domains of Antonio Pereira and Cata Preta, near the small town of Infacionado. Each of these estates is as large as Gongo, and they have a reputation of great richness, but the company will not be enabled to undertake the very expensive working of the Antonio Pereira and Cata Preta mines, until they have obtained a reduction of duties from the general legislative assembly.

In 1826, the works of the mine were begun by the company, who cut much deeper than had before been done, and very soon realised the expectations of the shareholders. In the short space of twelve years, this extraordinary mine produced upwards of 30,000 lbs. of gold, nearly £1,200,000, the Brazilian government received for its share nearly 2,000 contos (£250,000) for taxes on the produce of the mine, and £15,000 for export duty. The expenses of the company in the province of Minas Geraes may be estimated at 2,000 contos. The shareholders who have paid £20 per share in the purchase of the property and other necessary expenses of the working, have not only been repaid their advances, but have received £10 per share profit. Besides which, the company has a reserve fund of £50,000, without mentioning the stone-buildings, machines, ground, cattle, and upwards of four hundred slaves belonging to the company. It is true that these results are obtained by enormous expenses, the cost of working amounting to no less than £45,000 per annum, independently of the 20 per cent. to be paid to government. The number of people employed is considerable; great salaries have been granted to induce intelligent men to establish themselves in these solitudes, a common miner receiving as much as £8 per month. But living is very expensive in a country where provisions must be transported on the backs of mules, and where, in the rainy season, the roads are almost impassable. Within the last ten years labor has nearly doubled in price at Gongo.

The auriferous formation of the Gongo being a compound of soft substances, the progress of the miners is very rapid, but in order not to be interrupted, the works must be supported by timber, and notwithstanding the hardness of Brazilian wood, these timbers must be renewed every three years, so that the greater part of the woods in the vicinity of Gongo have been destroyed, and the company has been obliged to purchase forests at a great distance from the mine. Even these forests will soon be exhausted by the working of subterranean vaults and galleries, and the want of wood will be felt in all those places where mining companies are established.

The works of the Gongo mine are carried on to the depth of 55 toises, (330 feet); its length from east to west is 435 toises, (2,610 feet). The formation of Gongo is a friable bed of ferruginous micaeous shist, called in the native language, *jacutinga*, (*fer oligiste metalloide*). The compact substances containing gold, which are often fragments of a considerable size, are brought up to the surface in locked boxes, one of the keys is kept by the captain of the works, and the other by the superintendent of the washers. These solid substances having been broken by slaves with large iron mallets, are distributed amongst a number of washers placed with *bateas*,* near large basins full of water, where it is washed. The operation of washing being terminated, the gold remaining at the bottom of the *bateas*, is poured into a copper dish, and after having been dried and weighed, is delivered to the cashier, and put into leather bags; these bags are deposited in a strong iron chest, in a concealed place belonging to the directors. The less valuable substances of the *jacutinga* are brought up in barrels, and removed in carts to the bocard, where they are ground, and after having passed through open pipes lined with leather, upon which a stream of water is directed, they undergo the operation of washing by means of the *bateas*. A new process

* *Batea*, a kind of wooden porringer, commonly made of cedar.

coming into use is the amalgamation, by means of mercury, which mixed in certain quantities with the auriferous substances, separates, in a few hours, all the gold from the other parts of the ore.

Nothing is more uncertain than the product of the mine of Gongo; as the present director has judiciously said, "A blow of the pick may convert poverty to wealth." The mine has often produced upwards of a hundred lbs. of gold in one day, whilst the next day hardly three or four lbs. could be extracted.

In 1826, Gongo-socco was a miserable hamlet; it is now a fine village, having more than 1,000 inhabitants, and two churches, one for Roman Catholics, and the other for Protestants.

The houses in Gongo are all built of stone, and are surrounded by fine gardens. The Hospital is a large building, where, in case of need, a hundred beds could be made. In my several visits I have met with but five or six patients at one time; this circumstance speaks in favor both of the salubrity of the climate, and the humane treatment of the slaves and free laborers. The Director's mansion is large and commodious, though not well situated; the hospitality received there by strangers is proverbial throughout the province.

A system of order and regularity presides over all the branches of this administration. The Director displays a zeal, a knowledge, and an activity above all commendation. Every morning at half-past nine o'clock, the foremen of the different departments meet at the office, which is on the ground floor of the Casa Grande, to make their report, and receive the Director's orders. Every thing is done in writing, a book contains the instructions received from London, and those of the Director himself. Each officer, after having taken cognizance of those instructions concerning his particular department, signs his name in the margin. Another book is devoted to the remarks and inquiries of the functionaries, which the Director takes into immediate consideration, and he gives his answer in writing. Every six months the Directors in London publish an account of the course of business and the operation of the mine.

[Translated from the "Journal de l'Industrie et du Capitaliste." Paris, No. 1.]

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING MAY 9, 1840.

ENGLAND.

ARNOLD BUFFUM, America, and Jewin-street, London, and JOHN M'CURDY, Cecil-street, Strand, improvements in steam-engines, May 6.

SIR ROBERT SEPPINGS, Somerset-house, London, improvements in the construction of fids, or apparatus for striking top-masts and top-gallant-masts in ships, May 6.

WILLIAM FENNER, Bushell-rents, Wapping, carpenter, improvements in machinery, or apparatus for curing smoky and cleansing foul chimneys, May 6.

ALEXANDER ALLARD DE LA COURT, Great Winchester-street, London, a new instrument, and improvements in certain well-known instruments, applicable to the organ of sight, May 6.

JOSEPH SCHALLER, Regent-street, ladies' shoe-maker, improvements in the construction or manufacture of clogs, pattens, or substitutes for the same, May 6.

EDWARD HEARD, St. Leonard, Shoreditch, chemist, certain new composition or compositions, to be used for the purpose of washing in sea and other water, May 8.

LEVY ZACHARIAH, Portsmouth, pawnbroker, a combination of materials to be used as fuel, May 8.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO
THE WEEK ENDING MAY 9, 1840.

(Continued from p. 291.)

ENGLAND.

FREDERICK AUGUSTUS GLOVER, Charlton, near Dover, Clerk, an improved instrument for the measurement of angles, May 2.—First improvement is the mode of measuring angles by means of one reflection in one mirror, instead of by two reflections in two mirrors, as heretofore practised in reflecting instruments.

2dly. The mode of applying to the instrument a horizontal line and sight, which is governed by the gravitation of a pendulum, so as to refer the altitude of an object, which is viewed by one reflection in one mirror, to a horizontal line, without requiring a view of the horizon of the sea, or an artificial horizon, as usually practised.

3dly. The mode of applying to the instrument a magnetic needle, which is viewed at the same time with the object that is viewed by one reflection in one mirror; so as to refer the angles of bearing or direction of that object to the magnetic meridian.

4thly. The mode of measuring angles by means of one reflection in one mirror, and the apparent contact of the image of an object reflected at the very edge or termination of the reflecting surface of that mirror; that contact being made with a direct vision of another object, by the same edge or termination of the said reflection surface of that mirror.

ANTONIO JAMES MAYER, Ashley Crescent, Saint Luke's, Middlesex, an improved machine for cutting splints for matches, May 2.—The claim is for the oblique position of the following knife:—The gauge blades, the spring clamps, and the bent arm, to press up the blocks of wood.

Two blocks of iron, which have dovetailed grooves, are placed parallel on a stationary frame, for the purpose of allowing a knife carriage to work to and fro, which is a block of brass, with a slot cut in it, for the points of the gauge blades to pass through sufficiently to cut the blocks of wood to the depth required for splints. The oblique blade, or following knife, is affixed to the face of the brass block and beyond the gauge blades, which are at right angles to this knife. The blocks of wood are placed on the bed of the frame, attached to the dovetail blocks, and as the blocks are being pressed up by the aid of a bent arm and screw, spring clamps over the frame hold them down to the bed; whereby the knife carriage with its blades, in working to and fro, cuts the splints for matches from the face of the blocks.

JAMES MURDOCK, 11, Great Cambridge-street, Hackney-road, certain improvements in marine steam-engines, May 6.—This improvement is for an apparatus that will promptly disengage the paddle or propelling wheel from the action of the engine, as well as to re-engage the action when required.

There are several exemplifications of the invention, but one method, no doubt, will be sufficient to illustrate the principle.

A cranked arm from the main shaft of the engine, is connected to the apparatus, on the end of the main shaft of the paddle-wheel.

This apparatus consists of a cylindrical drum, with a ring up it of conical surface, attached by the interposition of a feather; a corresponding ring with conical surface fits over the first, and its disc is fixed firm to the paddle shaft.

A toothed ring has anti-friction rollers running between it and the drum, within which space are also pinion wheels taking into the toothed ring. A connecting band passes over the drum, and a pulley; a weighted lever, with friction roller at its end, presses against this band, causing the cranked arm to turn the toothed ring with its pinions, so as to

force the conical rings together, sufficiently to engage the connection of the two shafts.

When the weighted lever is raised to take the friction roller from the connecting band, the action is disengaged, and the ring revolves on the anti-friction rollers.

JEAN THOMAS LAURENT LAMY GODARD, Christopher-street, Finsbury-square, merchant, improvements in looms for weaving, to be worked by steam or other power, May 7.—The first improvement is for sizing the warp—a roller covered with woollen cloth, and dipping in a trough of size, is placed near the warp beam; a brush is made to work in the direction of the movement of the warp; and immediately under the warp, for the purpose of drying the size or thin paste, is a fan worked to and fro by means of a treadle, which also impels a striker against the studs projecting from the periphery of a wheel attached to the end of the axle of the brush.

The size by this means is equally divided over the warp, as it passes over the woollen cloth on the roller, and the brush smoothes any inequalities remaining. The fan is essential for drying the size on the warp before it is worked into a fabric.

The second improvement is for the mode of winding on the cloth or fabric, as it is formed. The cloth beam is fixed on arms, which are made to shift as the roll of fabric increases on the beam.

CAROLINE JULIA SOPHIA COX, 6, Addison-road, Kensington, an improved mode of fastening and uniting the edges of the divided parts of shoes, boots, bandages, packages, and other articles of dress or utility, May 7.—This improvement is for forming the edges of the divided parts of shoes, boots, &c., with loops, in place of eyelet holes. A piece of whalebone or cane should be placed through the whole length of the loops, so as to leave spaces used as eyelet holes. The lace may be used as in the ordinary way, but to avoid the necessity of unlacing the boots or shoes, a whalebone may be drawn out from the loops, which will immediately liberate the fastening. The specification for the like improvement adapted to stays, was reported a few weeks ago in our Journal.

EDMUND MOODY, Maiden Bradley, Wilts, improvements in machines for preparing turnips, carrots, parsnips, potatoes, and all other bulbous roots, as food for animals, May 7.—This improvement is for reducing the turnips, carrots, &c., into a pulp, which the inventor considers better and more nourishing for cattle.

The outer frame is made stationary, and the beam that passes over the upper part is used to support or steady the upper end of a vertical axle that has four arms projecting from it, and cased round with iron. This forms the conical-shaped inner frame, and the turnips or other bulbous roots are put within it, which in passing round are reduced to a pulp by plane or serrated cutting edges, arranged on the inner and outer frame.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of June 20. Each party will receive, in addition, a private communication to the same effect.

Harold Potter, Manchester, due June 9.

Samuel White White, Charlton Marshal, Dorset, due June 9.

Moses Poole, Lincoln's-inn, due June 9.

Thomas Richardson, Newcastle-upon-Tyne, chemist, due June 9.

John Leslie, Conduit-street, Hanover-square, tailor, due June 9.

Pierre Frederic Gony, Tavistock-street, Westminster, watch-maker, due June 11.
 Robert Hervey, Manchester, drayalter, due June 13.
 Robert Gill Ranson, Ipswich, paper-maker, and Samuel Millbourn, same place, due June 13.

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED FROM JANUARY 1ST TO JUNE 30TH, 1831.

(For the Year 1832, see Page 275.)

Animal charcoal, Jan. 15, Parker, W.
 Axles, &c., for railways, March 11, Stephenson, R.
 Boats, ships,—see Propelling and constructing, S. A.
 Bobbin-net lace, Jan. 13, Alcock, T.
 Bobbin-net lace, Feb. 3, Sumner, W.
 Bobbin-net lace, Feb. 15, Bailey, T. and C.
 Bridles for horses, Feb. 21, Philips, J.
 Brine,—see Evaporating, F. W.
 British plant,—see Drink, A. R.
 Carriages, &c., June 7, Pearse, J.
 Chronometers, Jan. 22, Ulrick, J. G.
 Cooking apparatus,—see Hearth, W. I.
 Cock or tap for fluids or gas, April 21, Dixon, W.
 Cock or tap for fluids or gas, May 18, Cooper, R. B.
 Dissolving snow and ice on railways, Feb. 21, Grime, J.
 Distilling apparatus, March 28, Brunton, T.
 Distilling apparatus, March 31, Ure, A.
 Distilling apparatus, May 18, Gutteridge, W.
 Distilling apparatus, June 29, Kneller, W. G.
 Distilling liquors, April 30, Beale, J. T.
 Drink,—see Leaf of a plant, A. R.
 Drink to cure gout, gravel, and other diseases, Feb. 21, Burgess, R.
 Economising steam, &c., Jan. 15, Seaward, S.
 Evaporating brine, Feb. 21, Furnival, W.
 Fire-grate, April 14, Eckstein, G. F.
 Gas for illuminating, June 4, Spinney, T.
 Gas,—see Cock or tap, D. W. and B. R.
 Generating steam, Feb. 21, Dunn, S.
 Generating steam, &c., April 2, Slater, J.
 Glass combined with metal, Feb. 11, Gunby, J.
 Glass vessels with figures, March 9, Pellatt, A.
 Gout, gravel, &c.,—see Drink to cure, B. R.
 Guns,—see Touch-holes, R. W. W.
 Hearth for the use of vessels, March 31, Wallace, J.
 Heating apartments, Feb. 21, Thevithick, R.
 Ice,—see Dissolving, G. J.
 Inking apparatus for printing, May 24, Wood, R.
 Iron pipes, tubes, &c., March 21, Royl, G.
 Lace-making machine, Feb. 21, Sneath, W.
 Leaf of a British plant, prepared for a healthy drink, Feb. 21, Abbey, R.
 Lock or fastening, April 14, Rutherford, W.
 Locks and spring fastenings, May 23, Barnard, G.
 Locomotive carriages, March 4, Napier, D. J. and W.
 Mangles, June 22, Waycott, P.
 Metal,—see Glass, G. J.
 Mules in spinning machines, May 23, Knowles, T.
 Oil of vitriol or sulphuric acid, March 21, Philips, P.
 Oleaginous substance, May 31, Collier, J.
 Paper-cutting, June 20, Fourdrinier, N.
 Paper-making, March 21, Turner, G. W.
 Pedometer, Feb. 15, Payne, W.
 Pianofortes, &c., Feb. 2, Schwieso, J. C.
 Primes,—see Guns, R. W. W.
 Printing machine,—see Stamping, H. C. M.
 Printing machines, Jan. 29, Winch, R.
 Printing, preparing, and weaving yarns to preserve figure, Jan. 22, Schwabe, L.
 Printing,—see Inking apparatus, W. R.
 Printing types, Feb. 14, Thompson, J.
 Propelling machine for boats, &c., and manner of constructing boats, ships, Jan. 22, Smith, A.
 Railways,—see Dissolving snow and ice, G. J.
 Raising water, &c., May 24, Fell, R.
 Refining and clarifying sugar, Jan. 31, Bates, J.
 Ribbon-weaving machine, Feb. 11, Guillot, C.
 Roller for horses, March 29, Coleman, T.
 Roving machine, Feb. 11, Gardner, G. G.

Rovings of cotton machinery, Feb. 26, Seldon, D.
 Rudders for ships, &c., March 21, Peake, W.
 Salt water into fresh water, May 24, Gibbins, W.
 Ships,—see Propelling and constructing, S. A.
 Skate, Jan. 18, Fellows, T.
 Small-wares, May 23, Westhead, J. P.
 Snow,—see Dissolving, G. S.
 Spinning cotton, flax, &c., Mar. 21, Potter, J. and J.
 Spinning, doubling, &c., cotton, &c., Mar. 11, Wood, C.
 Spinning,—see Mules, K. T.
 Spinning,—see Rovings, S. D.
 Spinning,—see Throstle-spindle, L. S.
 Spring fastenings,—see Lock, B. G.
 Stamping or printing machine, Jan. 22, Hannington, C. M.
 Steam-engines, Feb. 14, Morgan, W.
 Steam engines, Feb. 21, Thevithick, R.
 Steam engines, Feb. 28, Williams, R.
 Steam-engines, &c., April 14, Brunton, T.
 Steam-machinery, May 24, Hobday, S.
 Stretching machine, April 14, Morand, S.
 Sulphuric acid,—see Oil of vitriol, P. P.
 Sugar refining, April 14, Brunton, T.
 Sugar,—see Refining, B. J.
 Tap,—see Cock, D. W. and B. R.
 Throstle-spindle for spinning, &c., June 2, Lambert, S.
 Touch-holes and primes to percussion guns, &c., Feb. 11, Richards, W. W.
 Tubes,—see Iron-pipes, R. G.
 Weaving-machine,—see Ribbon, G. C.
 Weaving yarns,—see Printing, S. L.
 Wheels for railway carriages, April 30, Stephenson, G.
 Yarns,—see Printing, S. L.

BRITISH PATENTEES.

AN ALPHABETICAL LIST OF INDIVIDUALS WHO HAVE TAKEN OUT PATENTS IN ENGLAND, FROM JAN. 1ST TO JUNE 30TH, 1831.

(For the Year 1832, see Page 276.)

Abbey, Richard, Leaf of a British plant prepared for a healthy drink, Feb. 21.
 Alcock, Thomas, Bobbin-net lace, Jan. 13.
 Bailey, Thomas and Charles, Bobbin-net lace, Feb. 15.
 Barnard, George, Locks and spring fastenings, May 23.
 Bates, Joshua, refining and clarifying sugar, Jan. 31.
 Beale, Joshua, T., Distilling liquors, April 30.
 Blackwall, John,—see Alcock, Thomas.
 Brunton, Thomas, Distilling apparatus, March 28.
 Brunton, Thomas, Steam-engines, &c., April 14.
 Brunton, Thomas, Sugar-refining, April 14.
 Burgess, Richard, Drink to cure gout, gravel, and other diseases, Feb. 21.
 Coleman, Thomas, Roller for horses, March 29.
 Collier, James, Oleaginous substance, May 31.
 Cooper, Robert B., Cock or tap for fluids or gas, May 18.
 Dixon, William, Cock or tap for fluids or gas, April 21.
 Dunn, Samuel, Generating steam, Feb. 21.
 Eckstein, George F., Fire-grate, April 14.
 Fell, Richard, Raising water, &c., May 24.
 Fellows, Thomas, Skate, Jan. 18.
 Fourdrinier, Newman, Paper-cutting, June 20.
 Furnival, William, Evaporating brine, Feb. 21.
 Gardner, George G., Roving machine, Feb. 11.
 Gaunt, Thomas,—see Eckstein, George F.
 Gibbins, William, Salt water into fresh water, May 24.
 Grime, Jeremiah, Dissolving snow and ice on railways, Feb. 21.
 Guillot, Claude, Ribbon weaving machine, Feb. 11.
 Gunby, John, Glass combined with metal, Feb. 11.
 Gutteridge, William, Distilling apparatus, May 18.
 Hammick, Thomas,—see Peake, William.

Hannington, Charles M., Stamping or printing machine, Jan. 22.
 Hegesippe, Nicholas,—see Collier, James.
 Hobday, Samuel, Steam-machinery, May 24.
 Kneller, William G., Distilling apparatus, June 29.
 Knowles, Thomas, Mules in spinning machines, May 23.

Lambert, Samuel, Throstle-spindle for spinning, &c., June 2.

Morand, Samuel, Stretching machine, April 14.

Morgan, William, Steam-engines, Feb. 14.

Napier, David, James and William, locomotive carriages, March 4.

Parker, William, Animal charcoal, Jan. 15.

Payne, William, Pedometer, Feb. 15.

Peake, William, Rudders for ships, &c., March 21.

Pearce, John, Carriages, &c., June 7.

Pellatt, Apsley, Glass vessels with figures, March 9.

Philip, John, Bridles for horses, Feb. 21.

Philips, Peregrine, Oil of vitriol, or sulphuric acid, March 21.

Potter, John and James, Spinning cotton, flax, &c., March 21.

Richards, William W., Touch-holes and primes to percussion guns, &c., Feb. 11.

Rodgers, John and George,—see Fellows, Thomas.

Royl, George, Iron pipes, tubes, &c., March 21.

Rutherford, William, Lock or fastening, April 14.

Schwabe, Louis, Printing, preparing, and weaving yarns, to preserve figure, Jan. 22.

Schwieso, John C., Pianofortes, &c., Feb. 2.

Seaward, Samuel, Economising steam, &c., Jan. 15.

Seldon, David, Rovings of cotton machinery, Feb. 26.

Slater, James, Generating steam, &c., April 2.

Smith, Andrew, Propelling machine for boats, &c., and manner of constructing boats, ships, Jan. 22.

Sneath, William, Lace-making machine, Feb. 21.

Spinney, Thomas, Gas for illuminating, June 4.

Stephens, John L.,—see Waycott, Peter.

Stephenson, George, Wheels for railway carriages, April 30.

Stephenson, Robert, Axles, &c., for railways, March 11.

Sumner, William, Bobbin-net lace, Feb. 3.

Thevithick, Richard, Heating apartments, Feb. 21.

Thevithick, Richard, Steam-engines, Feb. 21.

Thompson, James, Printing types, Feb. 14.

Turner, George W., Paper-making, March 21.

Ulrick, John G., Chronometers, Jan. 22.

Ure, Andrew, Distilling apparatus, March 31.

Wallace, John, Hearth for the use of vessels, March 31.

Waycott, Peter, Mangles, June 22.

Westhead, Joshua P., Small-wares, May 23.

Westrup, Thomas,—see Gibbins, William.

Williams, Richard, Steam-engines, Feb. 28.

Winch, Robert, Printing machines, Jan. 29.

Wood, Charles, Spinning, doubling, &c., cotton, &c., March 11.

Wood, Richard, Inking apparatus for printing, May 24.

FOREIGN PATENTS.—BELGIUM.

OFFICIAL NOTICE.

In the *Moniteur Belge*, of the 6th May, notice is given that the following patents will be annulled, if, before the 15th June next, the patentee has not furnished satisfactory evidence that the patents in question have been regularly and continuously worked in the country, in conformity with the existing laws and regulations.

A patent of invention for 15 years, to L. J. J. Longchamp, of Paris, represented by C. J. Kepenne, for new processes relative to lighting gas, obtained from resinous, vegetable, animal, and mineral oils, February 12, 1838, together with a patent of addition for the same processes, April 27, 1838.

FOREIGN PATENTS.—FRANCE.

A LIST OF PATENTS GRANTED BY THE FRENCH GOVERNMENT IN DECEMBER, 1838.

(Continued from No. 40.)

293. Bres, Jean Mary, of Etoile, département de la Drôme, a patent of improvement for 5 years, for a machine called a pulley, or "petit tavelle," employed in spinning silk, Dec. 22, 1838.

294. Combalot, Louis, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of invention and improvement for 5 years, for an improved apparatus for the purpose of grinding apples, for making cider therefrom, Dec. 22, 1838.

295. Duchamp, sen. and jun., Jean and Pierre, rue d'Orléans, No. 7, section des Brotteaux, à la Guillotière, canton de Lyon, a patent of invention for 10 years, for damasking, and working gold or silver on all kinds of stuffs and ribands, either "à la barre," or with a frame working four pieces, Dec. 22, 1838.

296. Fremy, Edmond, of Paris, a patent of invention for 15 years, for a new process of manufacturing sulphuric acid, Dec. 22, 1838.

297. Giverne, Christophe Benjamin, of Paris, rue Faubourg Poissonnière, No. 4, a patent of improvement and addition to the patent of invention and improvement for 5 years which he obtained Sept. 15, 1838, for a means of rendering hats perfectly waterproof, Dec. 22, 1838.

298. Hullmandel, Charles, of London, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of invention and importation for 15 years, which he obtained July 14, 1838, for a new mode of preparing the surface of glass or metals, before submitting them to the action of acids, for the purpose of producing fine or shaded engravings, Dec. 22, 1838.

299. Julianne, Augustin Magloire, of Rouen, quai des Curandiers, No. 81, a patent of invention and improvement for 15 years, for manufacturing, by means of a stationary or portable machine, bricks and tiles, of all forms, sizes, and patterns, and for baking them by freestone, coal, or any other combustible matter, Dec. 22, 1838.

300. Kuhlmann, Frédéric, of Lille, a patent of invention for 15 years, for producing by a new method nitric acid and nitrates, Dec. 22, 1838.

301. Kuhlmann, Frédéric, of Lille, a patent of invention for 15 years, for a new process of manufacturing sulphuric acid, dry, smoking, and ordinary acids, Dec. 22, 1838.

302. Lamy, Jean Marie Abel, of Corbeil, département de Seine et Oise, address at Paris, rue St. Martin, No. 71, a patent of invention and improvement for 15 years, for a new brick oven, or a new economical apparatus, composed of several ovens united together, and dependant one each other, which are adapted to baking simultaneously, by means of one fire, all kinds of bricks and tiles of earthenware and delfware, and which he calls "polycaminasateur," Dec. 22, 1838.

303. Lefebvre, Henri, of Tréport, département de la Seine Inférieure, a patent of invention for 5 years, for an angling apparatus, called "gantier," Dec. 22, 1838.

304. Liebermann, Joseph Antoine Joachim, of Paris, Petite Rue Saint Pierre, No. 18, a patent of invention and improvement for 10 years, for a process of converting beet-root, and other vegetable juices, such as the citrul, &c., into alcohol and wine, Dec. 22, 1838.

305. De Lisle, Auguste Etienne, of Paris, rue de Provence, No. 29, a patent of invention for 10 years, for new stereotomic sections of the cube, applicable to solid bodies used for building purposes, but

principally to stone-cutting, sale of wood, shape of bricks, &c., from which results the greatest solidity in all buildings, Dec. 22, 1838.

306. Masnata, Jean, represented at Paris by Froide, rue Grange Batelière, No. 18, a patent of invention and improvement for 10 years, for communicating the appearance of marble to sulphate of lime or plaster-stone, Dec. 22, 1838.

307. Millet, François Noël, and Henry, Charles Joseph, of Paris, rue Laffitte, No. 8, a patent of invention for 15 years, for the manufacture of tars or bitumen, and for their application to bituminous masses, Dec. 22, 1838.

308. Morse, Samuel F. B., of New York, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of invention and improvement for 15 years which he obtained Oct. 30, 1838, for a system of telegraphing, founded on electro-magnetism, and which he calls "Morse's telegraphing," Dec. 22, 1838.

309. Newton, William, of London, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of importation and improvement for 15 years, for improvements in machines for shearing and dressing cloth, Dec. 22, 1838.

310. Newton, William, of London, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of importation and improvement for 15 years, for improvements in machines or apparatus for drying grain and seeds, Dec. 22, 1838.

311. De Pebrer, Paul, of Paris, rue Saint Nicolas d'Antin, No. 7, a second patent of improvement and addition to the patent of importation and improvement for 5 years which he obtained July 20, 1838, for a self-regulating economical heating apparatus, which he calls "calorifère à manomètre," Dec. 22, 1838.

312. Peltier, Toussaint, of Marigné, département de la Sarthe, a patent of invention for 5 years, for a machine for stopping carriages in descending steep places, Dec. 22, 1838.

313. Piard, Pierre Laurent, of Mulhausen, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a second patent of improvement and addition to the patent of invention for 15 years which he obtained Aug. 30, 1838, for the manufacture of stone-blocks for supports of the rails of railroads, Dec. 22, 1838.

314. Schmidt, Georges Frédéric, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of importation for 15 years which he obtained Feb. 7, 1838, for healthful economical stores for heating and purifying the air, Dec. 22, 1838.

315. Sinot, François Charles, of Paris, rue de Dragon, No. 1, a third patent of improvement and addition to the patent of invention and improvement for 15 years, which he obtained March 23, 1838, for a new system of balance lever, called "levier Sinot;" adapted to removing and filling up earth in all terracing operations, and for improvements in moveable horizontal rails for the conveyance of earth, and in general of all materials used in constructing roads and bridges, forming together a complete system of terracing and clearing, Dec. 22, 1838.

316. Touboulic, Pierre Marie, of Brest, département du Finistère, a patent of invention for 15 years, for a system of aerial conveyance, which he calls "velociposte," Dec. 22, 1838.

317. Treton, Nicolas, and Langlois Sauer, Louis Guillaume, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of importation and improvement for 5 years, for the manufacture of cloth buttons with flexible shanks, Dec. 22, 1838.

(To be Continued.)

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.

ANNUAL SESSION OF THE FIVE ACADEMIES AT PARIS.

It is known, that the five academies assemble every year in formal session, as a proof of the fraternal connection which unites them in one body. Each session is opened by a speaker, whose duty it is to show that the five classes of which the Institute is composed, concur by their different labors in a common end,—the progress of the human mind. This subject of the yearly oration is generally but very badly exemplified in the course of the session, which is altogether occupied by lectures which follow each other without order, or without any other apparent object than the amusement of the audience. The Academy of the Fine Arts yesterday (Saturday) had the honor of opening the ceremony, and M. Huyot, the President, delivered the prescribed oration. In the course of it, he, in the name of the whole body, thanked the government for having requested from the Academy of Moral and Political Sciences a report on the state of knowledge in those branches of science, similar to the reports which have already been directed to be given by the other academies. M. Rochelle, of the Academy of Fine Arts, then read a fragment of an unpublished work, entitled "The Arts among the Ancients and Moderns, viewed in connection with manners." In this fragment the author treated of the encouragement given to the arts. He observed that in Greece, as among all nations which had produced great artists, the arts were connected with public worship, and the state had encouraged them as a part of national faith and glory. Thus the works of the statuary, like those of the painter, were impressed with a character of grandeur, which they did not lose even when removed from their original sublime destination. The paper of most interest read at this sitting, was a notice of Mr. Huskisson, and his commercial reforms, by M. Blanqui, of the Academy of Moral and Political Sciences. The learned and ingenious academician considered Mr. Huskisson as a statesman, whom the premier had employed as a means of carrying into practice sound theories of political economy, and to succeed in an enterprise vainly attempted by Turgot. After highly complimenting the liberal views of Mr. Huskisson, and pointing out more particularly the course he adopted regarding the duties on silk, and the advantages which the English manufacturers had derived from it, M. Blanqui concluded his notice by an ingenious parallel between Turgot and Huskisson. This lecture was listened to with profound attention, and *Le Commerce*, from which paper we have abridged this notice, remarks, that the interest which the subject excited, proves that the French public are not so averse as is imagined to serious matters, when treated with talent, and that the members of the five academies should learn not to treat them as children, by amusing them with toys, at the risk of compromising their gravity. After the paper of M. Blanqui was concluded, M. Viermet, says the *Commerce*, by way of contrast, read some short fables in so jocular a manner that the whole assembly, including himself, were convulsed with laughter.

DISTRESS OF THE COTTON MANUFACTURERS.

It is impossible to conceive, says the *Memorial de Fécamp*, how much the working classes suffer at present. The low price of cotton fabrics has reduced to beggary, numerous families of workmen, who would think themselves well off if they could obtain, even by the hardest labor, the bread necessary for their daily subsistence. Every day men, desirous of procuring work go to Havre in the expectation of finding in that commercial town, either some relief for their distress, or of being employed in the docks. But it is to be feared that the great numbers out of

work, render this expectation fruitless. A few figures will show more clearly than many words, to what a height the distress has arrived. A family consisting of six individuals (a father, mother, two children fifteen years old, and two younger,) gain in making calico, by their united constant work, about 9 francs a week, and they consume, without satisfying their hunger, about 6 kilogrammes of bread per day, which costs nearly 8 frs. 75 centimes per week. There remains therefore to this family, when they can obtain work, only 25 centimes to supply the numerous other wants of persons who are kept to constant hard labor; and, besides, there must be deducted from these poor wages, about one franc for the necessary expenses incurred in the work. Men and women who are employed in field labor have been obliged to submit to a reduction of one-half of their wages.

It is stated in letters from Neville, that lately a great number of poor people have assembled at night, and, surrounding the houses of the farmers, have demanded bread, threatening those who refused to give them any. As many as 50 or 60 individuals have been seen in one farm. Among these mendicants, were some women dressed in men's clothes. Many of these vagabonds have been recognised as persons possessing an income of 300, and even 400 francs, and without families. This mendicity is become a most serious grievance to the country. Twenty-five persons have been apprehended for these offences.

FRENCH FARMS.

It is generally admitted, says M. Le Blanc, member of the Agricultural Society of Toulouse, that the middle of France is destitute of that class of well-informed and rich farmers to whom the departments of the north are indebted for their progress in agriculture—farmers who are sufficiently intelligent to understand that their interests are mixed up with those of the landed proprietors, and who constantly occupy themselves in improving the land,—farmers who are proud enough of their condition to wish to maintain it from father to son, until they acquire sufficient riches to become themselves the owners of the lands they cultivate. Every body knows the woful difference between this honorable class of farmers, and those ignorant, greedy, and poor farmers of our district, who are at no expense to improve the lands they cultivate, who often sell the manure on their farms instead of purchasing it, who exhaust the land, and then leave their farms in a deplorable state of sterility. Every body acknowledges the evil, yet no one does anything to remedy it, though the state of farming in the north proves that the evil is not without a remedy.

The intelligent farmers, whom I have described, cannot be expected to issue already formed from the earth, like Minerva completely armed from the head of Jupiter; the formation of such a class must be the gradual result of a complete modification in agricultural manners and customs. This class of farmers will appear when the landlords will let their farms at more reasonable rents, when they will grant long leases, in order to encourage the farmer to make great improvements in the hope of reaping the advantage of them; when the landlord, in short, will cease to crush the farmer, and will give him a higher opinion of himself by the consideration in which he holds him. It is the landlord, in a word, who has the power of making a good farmer, and he would be amply remunerated for such liberal conduct by the increased value of his land. I am happy to be able to confirm my opinions by the example of an honorable member of our society, the Marquis de Tauriac, who appears to have pointed out the course, by pursuing which, we should arrive insensibly at the creation of the class of farmers that we now want.

It is twenty years since M. de Tauriac divided his domain of Vergues, situated in the commune of Ville-mur, into as many separate farms as it contained

farm-houses. The husbandmen became farmers, and engaged at first to pay in kind, that is to say, in wheat and other grain raised from the soil, more than the landlord had ever obtained from it. These men were not ignorant that the earth would liberally repay the labor and care they were disposed to bestow on it. This mode of payment enabled M. de Tauriac to dispense with exacting from his new farmers a large security, which they could not have given. All the partial leases thus granted, have been renewed, for the third or fourth time, and each time with a regular increase of one tenth; and this improvement is far from being yet stopped, for the prospects of the farmers themselves have regularly increased, and each of them is now entertaining the ambitious views of becoming himself the proprietor of the whole domain. These families, whilst they have been increasing in prosperity, have gradually acquired some education, and honorable sentiments. They are proud of, and glory in the name of farmer. Many of them already know how to write, without ceasing nevertheless to labor, and they are fit to manage much larger farms. These good people, assured that they shall never leave the soil that they cultivate so profitably—thanks to the moderation of the landlord, who never exacts more rent than he can reasonably expect to derive from the growing progress of agriculture in general—improve it continually, as if it were their own.

This example of the paternal system of farming, is sufficient to prove that a good system of farming would not be so difficult to be established in our district as appears to be generally conceived; and it confirms me in the opinion, which I have always entertained, that moderate demands on the part of the landlord, that facilities prudently granted to the farmer, for which at the same time some consideration should be given, and especially long leases, would be the means ere long of attaining so important a result.

BRUSSELS.

The Brussels Royal Academy of Sciences and *Belles Lettres* held their general annual meeting on Thursday, when the prizes for the compositions sent in were adjudged. Four of the prizes were awarded, but none of the essays sent in for the prizes for the fifth and sixth subjects, on questions of practical science, were considered deserving of the prizes. The subject of the sixth prize of 2,500 francs, founded by M. Nothomb, was the consideration of the means of preventing explosions of gas in coal mines. For this prize, fourteen essays were presented, but M. Cauchy, the examiner, stated that in consequence of the recent publication of the excellent work of M. Combes on the subject, none of the essays was thought worthy of so great a prize, though many of them possessed considerable merit. It was directed, however, that five of those essays should be printed, and upon the proposition of M. Dumortier, the academy decided that a gold medal of the value of 800 frs. should be presented to each of the authors of the three best essays, and a silver medal to the authors of the two others that were deemed worthy of publication. The authors of the three principal essays were M. Gonot, principal engineer of the mines at Mons; Dr. Bischof, professor of chemistry at the university of Bonn; and M. Baine de Rodez, engineer, at Carmeux. At a meeting of the academy held on Friday, for the election of three members for the places vacant by deaths in the class of literature, M. Nothomb, M. Van de Weyer, and M. Moke, were chosen by large majorities.

A very handsome work prepared by M. Nothomb, being a report of the special commission appointed on the 7th of March, to inquire into the causes of the inundations in many parts of Belgium in 1838 and 1839, has just been presented to the members of the national representation. The commission points out the means of preventing the return of such disasters.

BELGIUM.

The library of the Belgian Chamber of Representatives has just received from the two Chambers of the Kingdom of Wurtemburg, a complete collection of the laws of that country, from 1806 to 1830 inclusive, consisting of forty quarto volumes, and five volumes in octavo. The printed papers of the session of 1838, containing the projects of laws, the reports, and discussions of both Chambers &c., were received at the library in December last. This accession is the consequence of an arrangement to exchange the public printed documents of both countries. Similar arrangements have been made with Spain, and the papers printed by the Spanish Cortes arrive at the library of the Belgian Chamber of Representatives as they are published.

The Belgian minister of public works has expressed his intention of exerting himself to cause a reduction in the fares by the railway, with a view to increase the number of passengers, the recent advance in the fares, having, in his opinion, been the cause of preventing many persons from going by that conveyance.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

OPENING OF THE LONDON AND SOUTHAMPTON RAILWAY.—From an early hour on Monday morning, the neighborhood of Vauxhall and the Nine Elms presented a bustling and animated appearance, in consequence of the announcement that had been made that the whole line between London and Southampton would be opened to the public on that day, and the streets were thronged with persons hastening to the Vauxhall terminus to witness the departure of the first train. The various inns and public-houses in the neighborhood displayed banners with the name and arms of the company, the union jack, &c., from the windows; and the principal entrance to the railway was also decorated in a similar manner. The steam-boats that ply between London-bridge and Vauxhall were crowded with persons, and afforded an abundant harvest to their proprietors. Shortly before eight, several of the directors of the company arrived at the station, preceded by bands of music, and at eight o'clock precisely the first train took its departure amidst the cheers of the bystanders. The up-train from Southampton started for London at half-past six, and it was expected would have arrived at Vauxhall at half-past nine; but in consequence of the bursting of a tube in the boiler when the train arrived at Worham Farm, a considerable time elapsed before the injury could be repaired, and caused a delay of an hour and a half. The next train, which left Southampton at ten o'clock, however, performed the whole distance in two hours and fifty minutes, having entered the Nine Elms station at ten minutes before one. The passengers expressed themselves highly gratified with the general arrangements, and the ease and comfort with which the journey was performed. A variety of amusements are provided for visitors along the line; and Mr. Brassey of Popham-green, the contractor for the eighteen miles of road from Basingstoke to Winchester, which was now first opened, provided a very fine ox, which was roasted on his premises whole, and gave a treat to the workmen and their wives and families, in celebration of the event. Dinners and entertainments were also given at Southampton to the managing directors resident there, and a most splendid display of fireworks, with emblematical devices, concluded the festivities of the day.

A NEW EASTERN COUNTIES' RAILWAY.—Another and another! "Between two stools," &c. This has long been the position of the counties of Essex, Suffolk, and Norfolk. During the prevalence of the Railway mania, which threatened at once to turn Old England into a huge gridiron, two com-

panies claimed the honor and advantage of making an iron road from London to Norwich; these were the Eastern Counties' and the Northern and Eastern Railroad Companies;—yet the two together have not yet produced 50 miles of railroad. And now, when both companies are diligently exerting themselves to make up for time lost, lo, another starts up, and proposes a third railroad to Norwich—the GREAT EASTERN—to run between the two former ones, and thereby save a distance of *ten miles*. The course proposed to be taken, for the purpose of bleeding the too plethoric money-holders, is “from London to Norwich and Yarmouth, by Woodford, Epping, the Redthings, Dunmow, Clare, Bury St. Edmund's, Irworth, New Buckenham, &c., with a branch from Bury Saint Edmund's to Ipswich.”—The Capital £2,500,000, in 42,000 shares of £50 each.

Here then the Eastern Counties, hitherto placed between "*two stools*," have now a third to rest themselves upon. As this is a position never yet contemplated by the manufacturers of proverbs, we will not venture to foretell the result; but allow the new candidates for East Anglian patronage to speak for themselves. A word of comment on their speculation and the *prospectus* is quite unnecessary: and we shall only observe that the opening statement is quite new to us.

"The Eastern Counties' Railway Company having signified their intention to carry that line no further than Colchester, and their powers to carry it further being on the point of expiring, without any application to Parliament to have them prolonged having been made by the company, the present line has been projected for the purpose of supplying the large and opulent counties of Suffolk and Norfolk with that direct and continuous railway communication with the metropolis, which they have been disappointed in obtaining through the medium of the Eastern Counties' line, and at the same time of furnishing all the northern parts of Essex with a readier access, by railway, to London, than the Eastern Counties' line, though completed as far as Colchester, could ever afford them. The present railway will make a direct course through the heart of the East-Anglian peninsula, and must therefore necessarily draw to it a much larger portion of the ample traffic of this part of the kingdom than could ever have fallen to the lot of a line approximating so closely to the sea-coast as that of the Eastern Counties, and exposed to so powerful a competition in the carriage both of passengers and goods, from the steam vessels which now swarm along the whole coast. It will be seen, too, from the following comparative table of distances, founded upon actual admeasurement, that the projected railway will have a considerable advantage in point of distance, not only over both of the two great highways to Norwich, but over the Eastern Counties' line (supposing there were still any chance of that line being ever completed).

"Comparative table of distances between London and Norwich:—

	Miles
By the Chelmsford and Bury road	102
— Newmarket road	108
— Eastern Counties' Railway line, by Chelmsford and Ipswich	108
— Great Eastern line	94
Greatest distance in saving	12 miles.
Least ditto	10 miles.

"The Great Eastern Railway, therefore, offers this admirable combination of advantages:—considerable reduction in the number of miles to be travelled, and a corresponding reduction in the number of miles of railway to be executed; the usual railway increase of velocity per mile, and superiority to all competition, whether as regards saving of time or saving of money. A more detailed prospectus, with a map of the line, will be shortly issued."—*Essex Standard.*

GREAT WESTERN RAILWAY.—We are happy to state that the works on the line near Wotton Bassett and Swindon are now proceeding with great vigor, advantage being taken of the present fine weather to make up for so much time unavoidably

lost during the late continued rain. Near this city, also, the utmost activity is everywhere apparent. The foundation of the pier in the centre of the Avon, near the old bridge, having been properly laid, operations have been commenced on the Widcombe side of the water. In the Ham Gardens, the erection of the arches on which the Bath dépô will be situated, is being rapidly proceeded with; while some steps have been taken towards erecting the viaduct across the Dolemead and Pulteney road. The tunnel at the top of Raby Place is likewise being finished in a very rapid manner. Towards Hampton, the works are of a heavy character, and the utmost despatch is therefore observable in that quarter. The workmen have made great progress in the necessary excavations for turning the course of the canal immediately opposite the Cleveland Baths. The embankments for the permanent way are here in a forward state; while near Hampton Church, and in the meadows beyond, the contractors have been very active, and operations have commenced throughout the extent of the line to Bathford. Altogether, there seems no reason why the line between Bath and Bristol should not be opened towards the close of this summer; and we hear that the Bristol directors have been taking measures which, it is hoped, will secure the opening of their division, and consequently of the entire line, in the middle of next year. The directors have made an experimental trip to Didcot, to which place the line is to be opened on the 1st of June; and the rapid progress of the works renders it almost certain of completion, to the junction with the Cheltenham line at Swindon, as early as Christmas next.—*Bath and Cheltenham Gazette.*

GLASGOW AND AYR RAILWAY.—The most active exertions are making along the line in order to effect the completion of the whole line by the end of July. Betwixt Kilwinning and Dalry the cutting and embanking are carried on during the night as well as the day; and the contractor of this lot, hitherto in the most backward state, is proceeding with the greatest vigor and success. Considerable progress has been made in overcoming the difficulties of the so-called bottomless meadow, which has required so much deposit for the embanking. The most formidable part of it yet remaining, extends to about three hundred yards; and it is singular to observe, that as the earth is poured on the embankment, the surface on both sides is heaved up to a considerable extent. As the workmen proceed, they find each new piece of embankment to sink during the night, which depression they have to restore by fresh pourings of surface material. Having once surmounted the obstacle, their task will be comparatively easy, as the embankment at this part of the line is only about three feet. The meadow, which lies betwixt Kilmarnock and Lochwinnoch Lochs, is supposed to have been at one time also covered with water, but it was not considered to have retained so much moisture as to cause such extra labor to make it properly *terra firma*, otherwise some change could have been made on the line, by which it might have been avoided. The lodging houses in Kilwinning, Dalry, and Beith, are crowded with laborers employed on the railway, whose expenditure must be felt in a considerable degree by those villages. The iron-works at Dalry are in the progress of building, and appear to be on a very extensive scale.—*Kilmarnock Journal.*

The line of the Glasgow and Paisley Railway is progressing at a rapid rate. The fine dry weather we have experienced this some time past, has enabled the contractors to proceed with their respective portions in a manner highly satisfactory to the directors. The bridges across the different streets in Tradeston, with the exception of one, are nearly completed; and the large brick arches from Cook-street down to the station or depot are mostly finished. The bridges have a fine appearance from the streets which they cross, and do credit to the contractors. Workmen are engaged cleaning out the site for the depot, where an elegant station-house is to be erected soon. The portion of the

line from Tradeston to the three-mile house is now laid with the permanent rails, and there are two or three fine-looking bridges, and a small tunnel, built across several farm roads. There is a locomotive engine, called the "Lucifer," running along the line between Tradeston and the three-mile house, employed in dragging wagons full of earth. When this undertaking is completed, it will be one of the finest railways in Scotland.—*Glasgow Chron.*

The Reports on the Anglo-Hibernian Railways are just ready to be placed in the hands of honorable members. The opinion of Sir James Gordon and Captain Beachey is in favor of Holyhead as the station for the Dublin packets, and the Railway Commissioners have given the preference to the line projected by Mr. Stephenson, *vid* Chester and Bangor to Holyhead.—*Railway Times.*

The facilities afforded by railways are well illustrated by the following fact, that in a few days the distance between London and York will be traversed in *two hours* less time than between London and Lincoln, although York is seventy miles further from London than Lincoln is.—*Railway Times.*

PRODUCTIVENESS OF RAILWAY PROPERTY.—A very general feeling seems to prevail among many persons that the palmy time of railways is entirely past; that the depreciated condition of the shares is a consequence of the bubble having burst; and that after the infatuated proprietors have completed the present lines, a complete stop will be put to the system. We know that this is a belief prevalent among whole classes of the community, and productive of much discouragement to those whose capital is embarked in these shares. So far, however, are the proprietors from having been deluded by any hopes not realised, that, in the teeth of the increased expenditure forced upon engineers by causes not within their control, the traffic has more than surpassed all previous anticipations, and in those lines sufficiently advanced, dividends have been declared that are calculated to satisfy the most distrustful. There is, we are sure, no branch of public enterprise of equal magnitude, which, in such a short time, has been so successful; and none in which the prospects are so good. About twenty companies have already declared dividends, and although in the very infancy of their existence, the bulk of them pay five per cent. and upwards.

1 per cent. and upwards	1 Railway.
3	3 "
4	2 "
5	4 "
6	3 "
8	3 "
10	3 "
14	1 "
15	1 "

Of these, above two-thirds pay five per cent. and upwards, and on which the gross amount of dividends is as follows :—

£830,000 at 5 per cent.	£41,500
460,000.. 6	27,600
3,000,000.. 8	240,000
1,340,000..10	134,000
1,500,000..14	210,000
200,000..15	30,000

£7,830,000 £683,100
Thus we find that on about seven millions and a half of capital, already more than nine per cent. dividend is paid, and the amount of railway property paying five per cent. and upwards will, we

doubt not, by the end of the present year, amount to fifteen millions. Not even the joint stock banks beat this. This is an earnest which we trust will encourage the doubting, and silence the grumbler.—*Railway Magazine.*

M. Charles Stehelin, engineer of Bitschevillen, in the department of the Haut Rhin, has introduced improvements in locomotive engines, tending to give them greater solidity and strength. One of the engines on his construction, has recently been tried on the Orleans railroad with the most satisfactory results.

ST. GERMAIN AND ROUEN.—A contract, says the *Journal des Débats*, has been signed between the St. Germain Railroad Company, and that for the proposed line to Rouen, by the valley of the Seine, in virtue of which, the Rouen line will branch off from the other at Colombes, and will thus have the benefit of the most expensive, as well as the most important part of the latter, which is already executed. The greater portion of the funds for executing the Rouen line has been furnished by English capitalists; among them, the promoters of the principal railroads in Great Britain, and particularly between London and Southampton, who have foreseen with sound judgment that, in the accomplishment of the Rouen line, a rapid communication will be established between London and Paris, with the assistance of the Havre and Southampton steamers. The bill is just on the eve of being submitted to the Chamber of Deputies, who will no doubt facilitate the completion of an undertaking, which has occupied the Chamber ever since 1835.

BRUSSELS.—The Minister of Public Works has announced the plans for the formation of a railroad from St. Nicholas to Termonde, with a branch to Lokeren, and contracts for its execution are requested. The railroad is to consist of a single line, and the expense of the construction, including the interest of the capital for one year, is estimated at 1,230,000 francs.

The Minister of Public Works gave audiences on Friday to a deputation, who applied for the aid of the government for the prompt execution of the railroad from the Sambre to the Meuse, which it is proposed to extend into France, to Sedan, Metz, and Strasburg. The Minister promised to give the undertaking his hearty co-operation.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the undermentioned places:—

Antigua	Demerara	Montserrat
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Brazils	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Heligoland	St. Lucia
Caraccas	Honduras	St. Vincent's
Carthagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Columbia	Laguya	Trinidad
Corfu	Malta	Zante

It will be forwarded, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

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"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsagents, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 10, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"W. Collins," Cambridge.—*The Caveat will only entitle our correspondent to notice. It will afford him no protection.*

"T. Hughes," Exeter.—*In this matter, you can be assisted only by the Court of Chancery.*

"J. Sackett," Salford.—*Our correspondent is in error. He may mark the word Patent upon the manufacture included in the original grant, notwithstanding the patent has expired.*

"James Anderson," Manchester.—*You are now quite secure; seeing that the defendant is obliged to give, with his plea to the action, a notice of the objections on which he intends to rely on the trial.*

"R. Isaacson," Glasgow.—*Send a copy of the specification, addressed to our publisher. Till we see it, we cannot, with safety, advise you.*

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, MAY 16, 1840.

We last week gave a full report of the proceedings at the opening of the College of Civil Engineers, which institution is founded for the purpose of conferring a practical, useful, and, at the same time, a sound moral and religious education on those young men who intend to enter that important profession. The college is also open to those who wish to acquire a knowledge of only certain branches of the science; as the theory and practical management of steam-engines. A workshop,

therefore, forms one of the places of study in the institution, wherein the students may be initiated into the method of making and putting together machinery of various kinds. We hail the formation of this institution with peculiar pleasure, as the commencement of a reform in the systems of public education, adapting them to the circumstances of the present times; and more particularly as the groundwork of improvement in the education, the character, and the station in society of that important class of men, the engineers employed in steam navigation, and on railways.

It is the natural consequence of any great improvement, especially where it marches with such rapid strides as steam-power applied to locomotion has done, that the public mind cannot be in a corresponding degree prepared for, and accustomed to, the change it introduces in the usual habits of society, nor make the requisite provisions for giving it proper effect. The demand for engineers to manage the engines in steam-boats and on railways increased much more rapidly than it was possible at once to supply from the comparatively limited number of skilful and trustworthy men, competent to execute so important a charge. The consequence was, that men, altogether ignorant of the principles of the steam-engine they undertook to manage, men without any standing in society, and often of drunken and dissolute habits, were too frequently appointed to the office. An acquaintance with some of the routines of practice was generally all the knowledge they possessed, and to such men the lives of hundreds were—nay, we fear we may say even now are—not uncommonly entrusted. The evil occasioned by this necessity of providing hastily for a new state of things does not end here, for the appointment of such a class of men, in the first instance, has the effect of preventing the formation of a superior order of engineers who would undertake that employment.

In the course of time, as the importance and responsibility of the office of engineer becomes more generally felt and appreciated, an improvement will no doubt be introduced, and the evil will cure itself. But in the meantime, years may pass away, accidents of the most fearful kind may happen, and when the public mind is fully alive to the necessity of appointing a superior class of men to the management of engines, it will be difficult, if not impossible, to find them, unless measures be adopted for educating and training persons for that occupation. The college of civil engineers presents a means

for attaining this desirable object, but the encouragement is still wanting, without which it will be impossible to make the profession of an engineer an object of ambition to persons moving in a respectable sphere of life. It therefore becomes peculiarly the duty of the government and of the legislature to interfere, to afford the necessary inducements, by elevating the position of persons who hold so important and responsible a situation.

It is too much the custom of the government of this country to rely on the efforts of individual enterprise to effect objects of national importance, and it is only when those efforts have succeeded, and when the success attending them renders support and patronage comparatively unnecessary, that they are usually accorded. This, however, is, in our opinion, to neglect one of the most important duties of a government, especially in a country which depends altogether on advances in the arts and manufactures for the maintenance of its prosperity. The extensive system of railroad communication which is now formed, and in the course of formation in England, was planned and executed without the slightest aid from the government; navigation by steam had been successfully established long before it was introduced into the royal navy; but now that those important improvements in locomotion have been extensively adopted, and are producing important changes in the face of society, the government would, indeed, but ill discharge its duties to the country were it to neglect the means peculiarly within its province, of rendering these means of conveyance efficient and safe for the public service.

At present, the engineers on steam-ships in the royal navy hold no rank. They have gradations, indeed, of first, second, third, and fourth engineers, with salaries proportioned to their numerical position, but they have no recognised rank; and though, with the exception of the captain and first officers, they hold the most important situation on board, they have no precedence whatever, as officers in Her Majesty's service. This is an anomaly that ought not to continue. It is extremely injurious in its direct effects, as it prevents men of liberal education and superior abilities from taking an employment that would lower their standing in society; and it is also highly prejudicial in its indirect tendency, for there would otherwise be formed a numerous body of young men from the middle ranks of life, qualified by their peculiar education and training to become engineer officers in the royal navy. So far as steam-navigation is concerned, the

means of immediately increasing the efficiency of the engineering corps depends on the government, which, by bestowing rank on engineers, would raise the character not only of those employed in her Majesty's ships, but it would exert an influence, indirectly, in elevating the characters and stations of all engineers employed in steam-boats.

With regard to the engineers of railroad locomotives, the province of hastening improvements in that class rests principally with the legislature and the railway companies. If, after a certain time, it were made an essential condition that all engineers should have been properly educated and trained for the employment, and should possess a certificate of qualification from some recognised authority, a great improvement would soon be perceptible in the class of men who have the management of railroad engines. Their salaries should also be raised, to make the remuneration correspond in some degree with the responsibility of the office. In furtherance of any law or arrangement of this nature, the college of civil engineers, or some other institution more especially adapted to that object, would be found eminently serviceable.

We have been led to make these remarks from a growing conviction of the necessity of adopting some measures to meet the wants which the recent changes in the modes of conveyance have created. Time may, it is true, gradually remedy the evils of which we complain; but when a new state of things has thus suddenly arisen, which is producing important changes in the internal relations of the country, it is neither right, nor politic, nor safe, to trust passively to the progress of the slowly-adjusting hand of time.

We have received an intimation from Mr. S. CARSON, inventor of "the New Motive Power," to the effect that he is preparing an article in reply to one which appeared in our Paper of last week,—headed "*Impossibility of gaining Power by Centrifugal Force.*" We consider ourselves bound to give it insertion, having said all we have to say on this matter. Our object is to elicit truth, and this can only be effected by free and open discussion. Far be it from us to throw impediments in the way of SCIENCE.

PUBLIC REWARDS FOR INVENTIONS.

It is not often that matters connected with improvements in the arts and manufactures engage the attention of parliament; and when

they do, they are soon dismissed, as if they were subjects of very trifling importance. On questions of commercial policy, indeed, some interest is taken, but when improvements in our manufactures, on which the existence of our foreign commerce depends, are brought under consideration, there are few members who deem the subject worthy of notice. It might be supposed, from the indifference manifested by the government and the legislature to the efforts of inventive genius, that the prosperity of this country was not in any way connected with the progress of manufactures and works of industry, for instead of taking every opportunity to encourage and foster improvements in machinery, and the production of new useful inventions, it is only when any one by its peculiar importance is forced on their notice, that they give it their unwilling attention.

The short debate in the House of Commons on Friday week, on the miscellaneous estimates, serves as an illustration of the existing feeling. One of the votes proposed, was a grant to Messrs. FOURDRINIER, for improvements in the manufacture of paper. The grounds on which this grant of public money to Messrs. FOURDRINIER rests, are these: that they were the first introducers into this country of a new process of paper-making, which, independently of its general advantage to the nation, has been the means of saving £10,000 annually in the printing of Parliamentary and other papers connected with the government; and that, notwithstanding the country had been thus benefited by their exertions, the Messrs. FOURDRINIER have been ruined and deprived of their patent by one of those absurd technicalities of the law which it is a disgrace to the government of any country should be allowed to obstruct the course of justice, and outrage common sense.

It is difficult to conceive a case, possessing stronger claims to favorable consideration from the government than this; and yet it was evident from the manner of the Chancellor of the Exchequer, that he was an unwilling agent in the matter; and he remarked, when opposing a proposition for increasing the amount of the vote, that he objected to establish a precedent of rewarding new inventions, as it would open the door to innumerable applications for such rewards. It seems, indeed, scarcely credible that a minister, holding a most important office in the government of this manufacturing country, should have thus publicly uttered a sentiment tending directly to discourage useful inventions.

In the particular case in question, the impolicy and absurdity of such a course are eminently conspicuous. Here is an invention, which, it is admitted, has actually produced an annual saving to the government of £10,000 independently of its general benefits to the community, and yet it is in discussing the propriety of granting a reward for such an invention that the Chancellor of the Exchequer expresses his fear of encouraging similar applications. Such a 'penny wise and pound foolish' system of economy in a minister guiding the affairs of a great nation, we trust, requires only to be pointed out to be universally condemned.

The very objection urged against the grants of public rewards for inventions, affords the strongest argument that can be advanced in their favor. Were men of science and of inventive genius encouraged by the prospect of adequate remuneration, the number of inventions of utility claiming rewards, would, no doubt, be increased; and, in our opinion, it is one of the duties of the government to promote as much as possible an addition to the national resources which such inventions occasion. It is quite clear, that in the new invention for paper-making—looking at the question merely as one of profit and loss—there is already a large balance in favor of Messrs. FOURDRINIER after their grant has been paid. The effect of offering rewards for useful inventions, would, we feel confident, be the means of multiplying similar instances of public benefit, and we cannot too strongly impress on the legislature, and the government, the policy of adopting a system of liberal remuneration for discoveries and inventions that tend to increase the sources of national wealth, and to add to the comforts and well-being of the people.

NEW INVENTIONS.

NEW APPLICATION OF OIL FOR ILLUMINATING.

M. Robert, the inventor of the gun which bears his name, has invented a new method of applying oil, which promises, from the accounts given of it, to prove very advantageous. It has been tried at a coffee-house in Paris with great success. The novelty consists in supplying the burners in different parts of the establishment from one reservoir of oil, which is not visible. The oil runs along tubes in the same manner as gas, and in the lamps in the coffee-room there is a constant flow of oil to the burners, that portion which is not consumed being conveyed back to the reservoir. Some of the tubes are jointed and moveable, like gas pipes. It is stated that the principle on which this application of oil for illumination depends, is certain, easily applied, and economical. This light has also the advantage of not tarnishing gilding, or discoloring paintings, and it is not accompanied with any disagreeable effluvium.

THE ARCHIMEDES SCREW.

The application of this newly-invented screw to steam navigation, is now exciting universal interest. On Wednesday, a committee of gentlemen, desirous of affording an opportunity to their friends of witnessing the success of Mr. F. P. SMITH's invention, invited them to join an excursion from Blackwall to Gravesend, on board their beautiful vessel the Archimedes. James Mackillop, Esq., J. D. Powles, Esq., John Loch, Esq., Matthew Forster, Esq., Henry Robinson, Esq., Mr. Forbes (one of the sons of Sir Charles Forbes, Bart.), Messrs. Galloway and Perkins, the eminent engineers, and about twenty other individuals of high standing in the scientific and commercial world, including some naval officers of distinction and foreigners, were of the party. The weather, in the early part of the morning, was unfavorable for the excursion; but soon after midday the clouds dispersed, and the atmosphere became as bright and pleasant as could be desired. The commander of the Archimedes, after making a little display of her capabilities off the Brunswick wharf, received his company on board, and at once started in the finest style conceivable, towards Gravesend, but with the tide and wind against him. From the position of the propeller, it may be supposed that the vessel causes but little swell. The fact is, she causes no more than a sailing vessel would do going at the same speed, the only trifling disturbance of the water being at the bow. The action of the steamer was, throughout, perfect, and called forth expressions of admiration from every one on board. The advantages she possesses over the ordinary vessels of the same class, the paddle-wheels of which, from their situation, never acquire the necessary resistance, and one or the other of which, in an agitated sea, is constantly out of the water altogether, needs no illustration. The screw at the stern, being ever under water, does not throw away its labors, nor is it exposed to external injury, like the great unsightly paddle wheels of the common steam vessel—a circumstance which, combined with other important considerations, leads to the conclusion that it must completely supersede them. In a naval action, the screw is not by any possibility to be got at by the enemy, whereas the old fashioned exposed paddle might be knocked to atoms the very first shot. Again, assuming that any accident occurred to the machinery, a steamer like the Archimedes, propelled by Mr. Smith's patent screw, may, in two minutes, be converted into as pretty a sailer as ever walked the waters. In the course of the short trip, the steam was taken off, and canvas hoisted; and the wind being, for a short interval, in her favor, the Archimedes ran up the river at the rate of from six to seven knots an hour. An example was also given of the facility with which the vessel puts about. No play whatever was required for the purpose. The movement was effected as it were upon a pivot. Two eminent ship-builders were among the guests, and they seemed to take a deep interest in all that passed.

The Archimedes went a few miles beyond sea-reach, and, after passing a most agreeable day, and enjoying the hospitalities of the captain on board, the company were landed at Blackwall at an early hour in the evening.

SAFETY VALVE TO STEAM BOILERS.

At the last meeting of the Society of Arts, the gold Isis medal was awarded to Mr. Robert M'Ewen, for a mercurial gauge, which answers the double purpose of an indicator of steam-pressure and a safety-valve for engine boilers. The novelty of the invention consists in the employment of a mercurial tube as a safe-vent for the steam, these tubes having hitherto been used only as indicators of pressure, and of a length sufficient to allow the steam to acquire a dangerous degree of pressure without giving any other notice of the fact than what may be observed by the eye. As the action of Mr. M'Ewen's safety-valve depends on a purely physical principle, viz., the opposition of the elastic force of steam to the static pressure of mercury with-

out a mechanical obstruction of any kind, it affords a free vent for the steam when its pressure exceeds the limit, corresponding to the length of which the tubes are adjusted, according to the strength of the boiler.

HALL'S HYDRAULIC BELT.

[WITH AN ENGRAVING.]

The experiments which are now in the course of being made with this machine, at Portman Market, have excited considerable attention, so much so, that we have determined on presenting our readers with drawings of the elevation and plan, accompanied by a description, by which alone could the importance attaching to the apparatus be properly estimated. A series of experiments were made on Monday, before Messrs. Donkin, Fairburn, and Brunel, a report of which, as they are of considerable public interest, we shall give in our next.

In the PLAN and ELEVATION, *a* represents the endless band; *b* the drum on which the band works; *c* the frame supporting the drum shaft; *d* a pinion with 27 teeth on drum shaft; *e* the crank shaft of engine; *f* prolongation of the engine shaft, connected by means of a clutch box; *g* a wheel with 61 teeth on the last-mentioned shaft, working into the pinion on drum shaft:—the end of the second shaft has its bearing at *o*, on the lever *h*, and which lever turns upon a centre concentric with the drum shaft, but quite free from it; *k* is a weight to counterbalance the lever *h*, the shaft *f*, the wheel *g*, and the scale *l*; *m* is shoot for the delivery of the water into a tank, the capacity of which has been accurately ascertained.

Now, supposing the engine to be set in motion, the lever *h* being free, the wheel *g* would have a tendency to rise (its teeth bearing upon those of the pinion *d*), were it not kept down by the weight in the scale *l* on the lever *h*. And on estimating the effect of this weight, it must be stated that the distance between the axis of the pinion *d*, and the point of suspension of the scale *l* at the end of the lever *h*, is to the distance between the axis of the pinion *d*, and the axis of the wheel *g*, as 3 to 1; consequently, the weight in the scales multiplied by 3, will equal the weight upon the axis *o*; and from the principle of the lever, the weight on the axis *o* would be twice that which is operating upon the teeth of the wheels. Therefore, this weight or force operating to turn the pinion *d*, when multiplied into the velocity of the wheel *g*, at its pitch line, gives a measure of the power expended in raising the water. For an example, we will take an actual experiment. The weight of the lever, wheel, shaft, &c., were first accurately counterbalanced by the weight *k*.

The experiment continued five minutes, during which, the wheel *g* made 193 revolutions, or 38·6 per minute. The weight in the scale *l*, required to keep the lever *h* from rising, was found to be 87 lbs; consequently the weight on the bearing *o*, would be $87 \times 3 = 261$; but the resistance at the periphery of the wheel would be but half that at the

lbs.

centre, or $\frac{261}{2} = 130\cdot5$ pressure on the teeth of the

wheel *g*, at the pitch line; and this multiplied by the velocity of the wheel *g*, at the pitch line, will give the measure of the power expended; the circumference of the wheel *g* being 6·357. Therefore,

revls. lbs.pressure

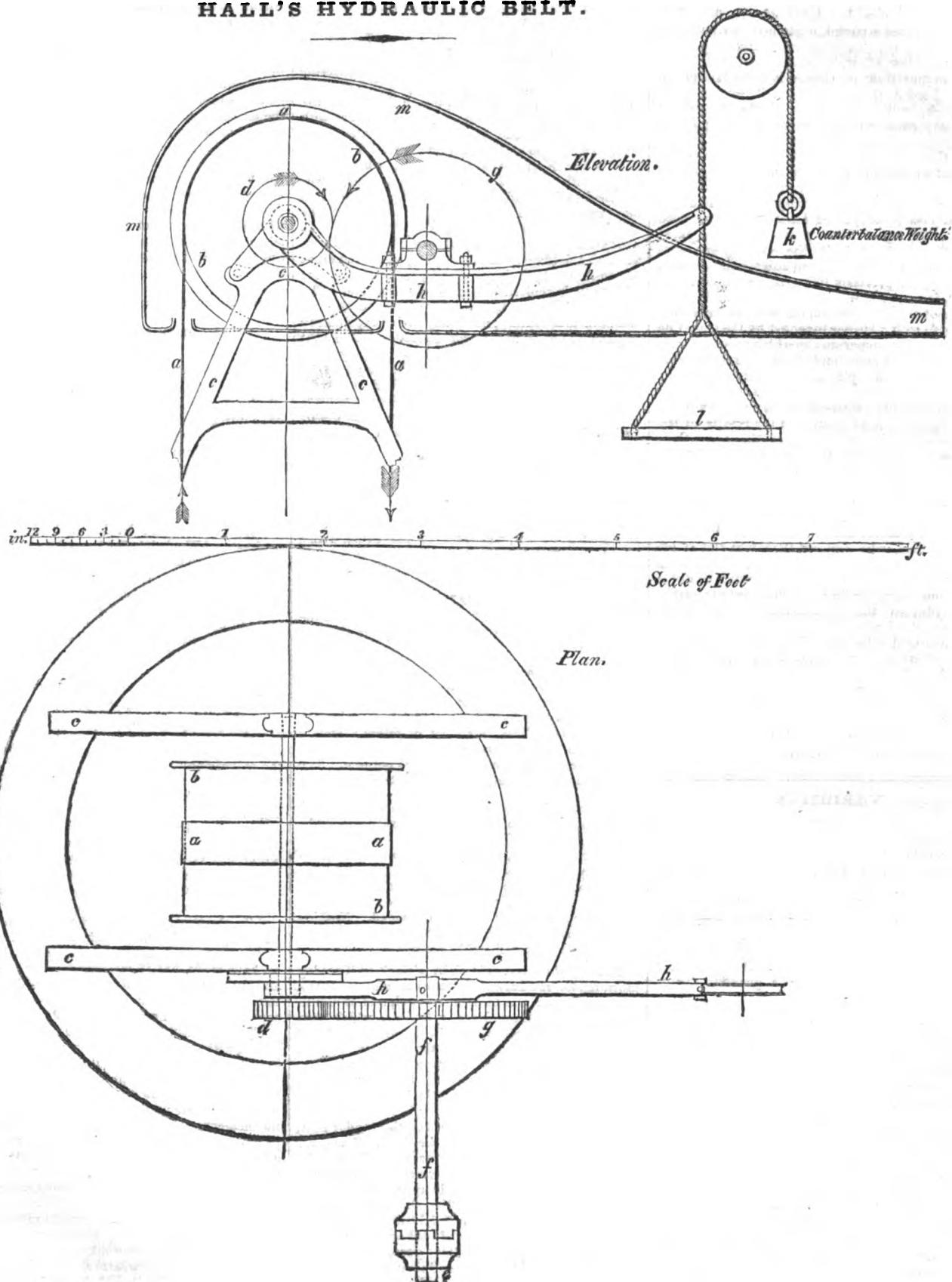
ft. p.m. on teeth.

$6\cdot357 \times 38\cdot6 \times 130\cdot5 = 32,022$ lbs. raised one foot high per minute. The quantity of water raised during the five minutes, was at the rate of 227·18 lbs. per minute; and the height from the mean level of water in the well during the experiment, to the under side of shoot *m*, was 131 feet.

Therefore $227\cdot18 \times 131 = 29,760$ lbs. of water raised one foot high per minute, and $32,022 : 29,760 : 100 : 93$ very nearly.

We would add that the woollen band which raised this quantity of water, was $4\frac{1}{2}$ inches wide, and consisted of two thicknesses.

HALL'S HYDRAULIC BELT.



THE NEWLY INVENTED GAS-LIGHT.

On Wednesday, the Count de Val Marino, the inventor of the new description of gas, for which he has obtained a patent, explained the nature of his invention, and exhibited the apparatus by which it is carried into effect, in presence of his Royal Highness the Duke of Cambridge, the Marquis of Douro, Lord A. Grosvenor, Lord C. Somerset, Sir F. Trench, and several other distinguished and scientific persons, who assembled for the purpose in a building attached to the workhouse in Mount-street, Grosvenor-square, where the apparatus is now erected, with the view, it is understood, of the gas being used experimentally in some of the streets in the parish. In order to compare the patent gas with that now in use, three lamp-posts have been erected at the top of John street, Berkeley-square; one of them is lighted with the ordinary gas supplied by one of the public companies, another, having a burner of precisely the same description with the first, is supplied with the patent gas, while the third is not only lighted with the new gas, but is furnished also with a burner invented by the Count de Val Marino. The apparatus by which the gas is manufactured is of a very simple kind. There is a brick furnace in which are placed three retorts, and by means of this contrivance, certain quantities of tar and water, the only substances used, are decomposed by the application of heat, and the results of the decomposition being united, form the gas. Connected with the furnace, and at a very short distance from it, is a gasometer, but the vessels of lime-water, and other apparatus used to purify the common coal gas, are altogether dispensed with, the purity of the new gas, as formed at first, rendering their presence unnecessary. This was illustrated by the inventor, who exposed the silver dial of his watch to a stream of gas, without its being in the slightest degree tarnished. The invention, as stated by the Count, consists in converting into bi-carburetted hydrogen the superabundance of carbon which is evolved when fat or bituminous substances are transformed into gas. The gas was lighted, and burned with a very white flame, and without smoke, but the daylight rendered it difficult to judge of the intensity of the light. The inventor states, that owing to the cheapness of the materials from which the patent gas is made, it could be supplied at little more than one half the price charged by the gas companies.—*Times*.

VARIETIES.

A Portrait of His Majesty Mahomed, Shah of Persia, has just been issued by Messrs. Welch and Gwynne, St. James's Street. Mr. J. H. Twigg, the artist, and Mr. J. E. Coombs, the engraver, have produced a most effective picture. The Shah is drawn seated on his throne, and is habited in a most costly dress. His countenance is manly, open, and expressive, and his whole demeanor that of an intelligent and brave man. At the present moment, this portrait possesses a peculiar degree of interest.

Groom's Collection of Tulips.—The superb collection of Mr. Groom, at Walworth, was opened for private view a few days since, and afforded the usual annual treat to the lovers of this interesting flower. Notwithstanding the dryness of the season, the blooms were in very fine perfection, and the whole of the grounds, which contain upwards of 250,000 bulbs, more than half of which were in perfect bloom, exhibited a very rich and varied effect. The great object of attraction was the show bed, containing upwards of 2,000 flowers in bloom, and including above 700 distinct varieties of the choicer ones. Amongst the most prominent of these was Nourri Efendi, named after the late Turkish ambassador, who is not only a tulip-fancier himself, but when in this country made large purchases for the Imperial Harem at Constantinople, and to which tulip the value of £100 is attached; Prince Albert, a new seedling of last year, deeply feathered on the edge, valued at £100;

Louis XVI., an old standard byblomen; Pompe Fundse; Iac; Sir R. Peel, a seedling of last year; Duke of Devonshire, a new bizard valued at £50; Edmund Kean; Ponceau tres Blanc, a deep blood color on white; Catalini, a fine rose; Imperatrix Florine, white with very dark feather; Fabuis, &c., all of which are flowers to which considerable value is attached. There is a very striking superiority in the improvement of the cultivation of the bulb, as appears from contrasting the above with the Catafalque, one of the choicest and most esteemed of the old Dutch varieties. A striking one is the *Marriage de mon Fils*, a white flower striped with rose, and to which so much value was attached in Holland during the tulipomania, that one was considered an ample dowry for the daughter. In the cultivation of the tulip, if we do not exceed, we at least equal our Dutch and continental neighbors, who have long been esteemed our superiors in bulbous plants, and every year adds to their choiceness and good characters. The taste for this flower is decidedly again on the increase in this country, nor is any lavish expenditure required to obtain a superior collection. Amongst the company who have visited the grounds during the week, have been the Archbishop of York and party; Duke of St. Albans; Earl of Roseberry; Dowager Countess of Buckinghamshire; Countess of Jersey; Baron and Baroness de Cetto; Ladies Peel, Grenville, Spencer, and Mildmay, with several other floral amateurs.

British Museum.—The Queen Dowager, accompanied by Lord Denbigh, Lord Howe, &c., visited this Institution on Thursday last.

The arrivals at the port of Antwerp during the month of April last, amounted to 145 ships, with a total tonnage of 18,177; being an average of 127 tons each ship. Of these ships, 37 were Belgian, 4 French, 13 American, 18 English, 35 Danish, 3 Swedish, 6 Norwegian, 22 Hanoverian, 9 Prussian, 1 Dutch, 1 Spanish, and 1 from Oldenburg. On the 1st of this month, there were 315 ships in the port of Antwerp.

Post Office Labels.—It has been ascertained that certain individuals have endeavored to use the post-office labels a second time,—having discovered a chemical process whereby the post-office marks may be obliterated. This is an act of *felony*; and to urge in vindication, that it was only done by way of *experiment*, would avail the parties nothing. The authorities are determined to prosecute all offenders.

Newspapers by Post.—In consequence of repeated complaints of the non-delivery of newspapers in the country, the Post Office authorities have issued a notice to the effect, that the name and address of the party for whom the papers are intended, may be written on the paper itself, as well as on the envelope. In case, therefore, of the latter being lost, the paper will be carefully delivered. Nothing but the name and address must be written, or the paper will be charged treble postage.

The Royal George.—At eight o'clock on Tuesday morning, the red flags at Spithead announced that a great explosion was to be attempted, and at eleven o'clock one of those huge cylinders, which have already been described, and filled with 2,116 lbs. of gunpowder, was lowered to the bottom. One of Colonel Pasley's divers (George Hall), who has acquired great expertise in these operations, descended his rope-ladder a little in advance of the cylinder, and succeeded in fixing it securely to one of the lower gudgeons or braces on the rudder post, within six or eight feet of the keel. The diver having remounted, and the vessel being withdrawn to a safe distance, the enormous charge was ignited by means of the voltaic apparatus. Within less than two seconds after the shock was felt, the sea rose over the spot to the height of about 15 feet, or not quite half so high as it did on the occasion of the great explosion last year, a difference ascribable, probably, to the cylinder on the present occasion having been placed under the hull instead of alongside it. The commotion in the water, however, was so great, as to cause the lumps and

lighters to pitch and roll at a great rate. The whole surface of the sea for several hundred yards round, was presently covered with dead fish and small fragments of the cylinder. Along with these, were innumerable tallow candles, and a mass of butter a foot and a half in length, evidently driven up from the purser's store room. As soon as the vast commotion in the water had subsided, and the boats had returned from the universal scramble for the candles and dead fish, the diver proceeded again to the bottom, and soon reported that the whole stern of the ship had been driven to pieces, and that, so far as he could ascertain, there was now a free and wide channel directly fore and aft the ship, from stem to stern, through which both the flood and ebb tides will rush, and thus the mud with which the hull of the Royal George has been silted for half a century will be washed out, and the way cleared for Colonel Pasley's further operations.

THE ARCHIMEDES STEAM YACHT.

The trials between this vessel and her Majesty's packets on the Dover station, to which we briefly alluded in the INVENTORS' ADVOCATE, of last week, have attracted much attention, and in reference to an invention which appears likely to work a great change in steam-navigation, we take an early opportunity to lay the leading features of the case before the public. We have reported the experiment made on the Thames, on Wednesday last, in another part of this day's paper.

Captain Chappell, R. N., and Mr. Lloyd, the engineer, of Woolwich Dock-yard, were deputed by the Admiralty to superintend these trials, and the Widgeon, selected as the fastest packet upon the station, was placed at their disposal. To the facts which they elicited, we shall confine ourselves at present, without comment as to the aptness of Mr. Smith's propeller for river use, till a vessel appears which shall have been constructed for that purpose.

The Archimedes was built to show a combination of sailing and steaming properties hitherto unattained in the same degree of perfection. We have seen the log which was kept by Commander Burridge, R.N., and without going into the detail of all the experiments, we venture to say that the great superiority of the propelling power of the screw over the paddle was completely demonstrated during the trials.

The area of the midship section of the Archimedes, as sailed, is 143 feet, with, nominally, 80 horse power, but rarely working up to 76. The area of the midship section of the Widgeon, as sailed, is 95 feet, with 90 horse power; yet with steam alone, and in still water, which is much in favor of the paddle, the Widgeon never obtained more than the advantage of a few minutes in 19 or 20 miles.

This alone is sufficient to justify the observation we have made, but if we consider the heavy masts and rig of the Archimedes, her greater draught, and the insufficient working of the present engines, the superiority is still more remarkable.

The combination of the sailing properties of the vessel, with this steaming power, is an object of immense importance; for during long voyages the steam need only be employed as a resource in aid, when the sailing power is deficient. The American liners reach our ports in very little less time than the steamers, and it is principally during the latter part of the voyage, in narrow channels, that the advantage of the steam is perceptible. What a saving in fuel is now attainable!

During the late experiments, the Archimedes was uniformly successful, when sails were used; and the facility of detaching and attaching the propeller in two or three minutes, was another advantage much noticed, for it often takes hours to disconnect the paddles in rough weather.

The steam used on board the Archimedes is at a pressure of 6 lbs. per square inch; the coals consumed 6½ cwt. per hour. The commercial world

will surely pay attention to this economical mode of working vessels, where no loss of time will ensue, and greater safety is obtained both for life and property.

As we abstain from noticing the advantages which are offered by Smith's propeller in river navigation, so do we at present from stating the self-evident and peculiar advantages to be derived from it by ships of war.

The following statements, from the official report made to the Admiralty, shows in a strong point of view the correctness of the foregoing observations:—

STATEMENT OF THE BURDEN, STEAM POWER, AND IMMERSION OF THE TWO VESSELS.

Names.	Tonnage	Diameter of Cylinders.	Length of Stroke.	Mean Draught of Water.
Archimedes,	237	37 inches.	3 feet.	9 feet 4 inches
Widgeon....	162	39 inches.	3 ft. 1 inch	7 feet 3 inches

These trials clearly prove that the speed of the Archimedes is slightly inferior to that of the Widgeon in light airs, calms, and in smooth water; but as the steam power of the Archimedes is ten horses less, and her burden seventy-five tons more than the Widgeon, it is evident that in these vessels the propelling power of the screw is equal, if not superior, to that of the ordinary paddle-wheel. In this respect, therefore, Mr. Smith's invention may be considered completely successful.

We understand that the Archimedes will be immediately despatched to Bristol, Liverpool, and the principal ports in the United Kingdom, with the view of submitting the merits of Mr. Smith's invention to the consideration of the great commercial interests connected with steam.

SCIENTIFIC MEMORANDA,
AND
NOTES ON ART.

Aerostatic Society.—This society, whose interests we have advocated *ab initio*, is fast gaining ground in public opinion—many scientific individuals having spoken of it in high terms of praise. The Colleges generally, and many learned institutions have promised it their cordial co-operation, seeing that they are greatly interested in the proposed experiments in the higher regions of air, where alone any true barometric formula and astronomical refractions can be obtained.

The machine with which the proposed experiments are to be made, is designated the "Aerostate;" several modifications of which are now in actual use. One, by the worthy president of the society, Sir George CAYLEY, Bart., (whose writings for many years past, on this subject, are well known), exemplifies "propulsion"—a second, by the intrepid Aeronaut, GREEN, economises the suspending agency of gas, in the act of descent, which he effects by rotary vanes and the assistance of a guide-rope.

Mr. Monck Mason, also, the author of "Aeronautica," will shortly exhibit an ingenious and powerful locomotive action, attached to an aerial machine of his own contrivance; and Mr. Willson, architect (to whom the "Aerostatic Society" owes its origin), is engaged in bringing forward an entirely new mode of constructing the "Aerostate," which, from its various useful objects, is likely hereafter to produce many advantages important to the civilised world.

A prospectus has been issued, one of which the society has just forwarded us. We abridge it, with a view to show the nature and objects of the undertaking:—

"The vast extent of the atmosphere, the paramount influence it exerts over all our movements whether of pleasure or of profit, the share which it contributes to the maintenance and formation of so many brilliant and important phenomena, and the ready means of transport it affords to bodies which

are, or might be, fitted to avail themselves of its advantages, all combine to render it a subject of peculiar concern to the philosophical enquirer, and point with special interest to that Art, by means of which alone our acquaintance with it can be enlarged, or our dominion over it extended and confirmed.

"Notwithstanding, however, the acknowledged interest, and the magnitude of the results necessarily attendant upon success, it is remarkable how little has been hitherto attempted either with the design of improving the practice of Aerostation by the adaptation of new powers to the Aerostate, or of extending its application to such purposes as, even in its existing condition, it is peculiarly fitted to accomplish. Two or three ascents undertaken in the interests of science, and one solitary instance of the employment of the machine as an engine of *military observation*, are the only exceptions to the latter, which present themselves throughout a period of nearly sixty years; while in respect of the former, notwithstanding the attention which it has occupied, and the ingenious speculations to which it has given rise, till within a few days past, not one serious experiment appears to have been tried, or one feasible model executed, for the purpose of illustrating the possibility of practically accomplishing the art!"

"That it is to the great expense necessarily attendant upon all experiments in Aerostation upon the large scale, and not to any inherent obstacles to success, that this neglect is mainly to be ascribed, there is no doubt. The great size of the apparatus required for the support of only one individual, the costly nature of the materials employed in its construction, the expense incurred in the inflation, to be renewed every time it has to be used, with many others incidental to its maintenance and employment, all require a capital which few individuals have at their command, in that station of life, at least, to which the exercise of the art has hitherto been generally confined. It is only by combining together the resources of the many, that these objections can be removed; and with this view it is that the Aerostatic Society addresses itself to the notice and patronage of the public.

"The objects which it especially proposes to accomplish are, as expressed in its title, to extend the application of the art to all purposes to which it may be beneficially converted, and to endeavor to improve the practice by the adoption of such expedients as may be considered most likely to conduce to the establishment of a definite course. The former of these, includes the institution of experiments in the different branches of Meteorology, Electricity, Galvanism, and Magnetism, with their various combinations; Atmospheric Refraction, the theory of the Aerial Currents, Terrestrial Radiation, and such other subjects as may be deemed susceptible of advantage from investigations conducted under the peculiar circumstances of the case; as, also, the surveying of the unexplored districts, the employment of the "Aerostate" as a means of making observations in time of war, or its adaptation to any other purposes to which in its present unfurnished condition it may be thought capable of being successfully applied."

New Machine for the Manufacture of Cloth.—At this moment, master-manufacturers are flocking from all parts of Yorkshire and the West of England, to Sheffield, to inspect the performances of a machine, brought into work by Messrs. Williams and Wells, for the manufacture of cloth, which not only almost wholly supersedes the necessity, but utterly defies the competition, of human labor. By this machine, three men, with the help of two boys, can turn out three hundred yards of cloth per day, and the cost of the manufactured article is reduced in about the proportion of 20 shillings to six! Indeed the cost of labor is said to be hardly a calculable element in the cost of production, which is almost entirely limited to the value of the wool. There seems to be no doubt that these facts, as detailed by the Sheffield and Leeds papers, are correct.

SCIENTIFIC MEETINGS IN LONDON,
FOR THE WEEK COMMENCING MAY 18TH, 1840.

Monday.	Statistical Society.....	8 P. M.
	British Architects.....	9 P. M.
	United Service Institution.....	9 P. M.
	Medical Society.....	8 P. M.
Tuesday.	Horticultural Society.....	3 P. M.
	Instit. of Civil Engineers.....	8 P. M.
	Electrical Society.....	8 P. M.
	Architectural Society.....	8 P. M.
	Uranian Society.....	8 P. M.
Wednesday.	Society of Arts.....	7½ P. M.
	Microscopical Society.....	8 P. M.
Thursday.	Royal Society.....	8½ P. M.
	Royal Society of Antiquaries.....	8 P. M.
Friday.	Royal Institution.....	8½ P. M.
Saturday.	Mathematical Society.....	8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL INSTITUTION.

May 1. Friday Evening Meeting.

Mr. Griffiths delivered a lecture on the "Sources and Uses of Sulphuric Acid." The lecturer commenced by detailing the various opinions entertained by the alchymists with respect to sulphur. This article being known to the ancients in different forms,—one peculiar supposition entertained by them was, they imagined from its color it probably might be the source of that material to which alchymists most indefatigably devoted their attention and the whole of their lives. These philosophers discovered that by subjecting the sulphate of iron to heat, they obtained an oily acid liquid, and Basil Valentine, an alchymical monk in the year 1440, called it oil of vitriol; after the distillation had been effected, there remained in the retort a red oxide of iron, which they termed the *Caput mortuum* of vitriol. It was Valentine who discovered the action of this acid on common salt and nitre, forming the hydrochloric and nitric acids, and has recorded nearly all the properties of sulphate of iron at present known.

The original mode of obtaining sulphuric acid from the sulphate of iron and pyrites was detailed, and the apparatus explained by diagrams; the mode is still practised in Germany, Sweden, and Nordhausen, in Saxony. The sulphate of iron was first heated in ovens; its color changes, and it becomes nearly anhydrous (destitute of water); it was then quickly transferred into retorts in a galley furnace, and glass globes applied, and the material subjected to a high heat. After the vapours of sulphurous acid had passed over, the sulphuric acid condensed in the glass receiver, forming the Nordhausen acid of sp. gr. 1.890, which is used principally by dyers to dissolve indigo.

Valentine was the first who found that by burning sulphur under a moistened bell-glass, acid matter was generated; this fluid was termed oil of sulphur, the process being at this time very imperfectly understood, it being but a solution of sulphurous acid in water, and attracting another equivalent of oxygen, by exposure to air, before oil of vitriol could be produced; it was sold at two shillings an ounce, while that obtained from the sulphate of iron sold at three shillings the pound. An original bell-glass, as employed by Mr. Boyle, was shown, and it was considered a good day's work if five ounces could be obtained from one bell in 24 hours.

Valentine was the first who hinted at the importance of nitre in the production of sulphuric acid. The first works erected in this country for its manufacture were at Twickenham (the lecturer here described the process employed), and the article was sold at two shillings and sixpence per pound, being designated oil of vitriol, made by the *Bell*. Dr. Roebeck, of Birmingham, first substituted the leaden chamber for the glass apparatus; upon the floor of this chamber a stratum of water was

placed, and the nitre and sulphur burnt in vessels above the water; the acid was afterwards distilled in glass retorts.

Mr. Walker, in 1772, established at Battersea a manufactory in which the leaden chambers were employed, being on the average twelve feet square, and by this substitution the price fell to one shilling the pound; at this time, even, it was distilled in glass retorts. This process was continued until it remained for Mr. Parkes to use in the place of glass (which were dangerous, from continually breaking,) vessels of platinum; the article was then reduced in price to fourpence per pound.

Mr. Griffiths explained by a model the construction of the leaden chambers, the size of those usually employed being 120 feet long, 40 feet wide, and 20 feet high, divided into compartments by lead, which partitions reached within a foot of the water placed at the bottom of the chamber, so that the fumes of the sulphur, after having entered the first part of the chamber, had to pass beneath the partition into the second, and so on, thereby causing a more safe abstraction of the oxygen contained in the air; in some factories they allow a current of air to pass through; in others air is admitted only at intervals.

In former times, the mixture of native Sicilian sulphur with one-eighth its weight of nitre, was placed in tripods or on trays in the floor of the chamber, over which vessels were suspended cones of lead, in order to prevent the acid falling into the materials; the mixture was ignited by red hot iron balls; by this process, however, the combustion was not complete, one-third of the sulphur being wasted. Mr. G. then explained the oven, of which a diagram and model were shown. In the oven there is a plate of iron over the fire, upon which the material was consumed; by this modification, 250 lbs. weight of oil of vitriol was obtained from 100 lbs. weight of sulphur burned.

An improvement on this process was effected by the French, who making use of molasses, and the introduction of steam into the chamber in the place of water, succeeded in obtaining 300 lbs. strong acid from 100 lbs. of sulphur. In order to give an idea of the quantity of sulphur consumed in one of the largest chambers in use, Mr. G. stated that 12 cwt. is the usual quantity burnt in 24 hours, this being divided into 6 charges.

As soon as the combustion has taken place, the water (which was placed at the bottom of the chamber to absorb the acid generated by the combustion of the sulphur and nitre in the air) is drawn off, possessing a strong acid nature, having a specific gravity of 1400, water being 1000. It is then run off into large leaden evaporators, by means of siphons; this part of the process is carried on until it indicates a sp. grav. of 1.6-10ths. This fluid is conveyed into the platinum vessels, or stills, and runs over until it reaches a sp. grav. of 1.840, when it is put into carboys and sent to the market. Owing to the enormous expense attendant on the platinum stills, they are extremely thin, and supported in a jacket of iron. Mr. Palmer, the largest manufacturer near London, has two of these platinum stills, each holding 10 carboys, or 800 lbs. of acid; the cost of which Mr. G. was informed was £3,000. In cold weather a white deposit takes place on the sides of the chamber, a specimen of which was shown; the workmen state when this occurs that the chamber is sick—the French call it *Maladie de Chambre*.

After these preliminary observations, the lecturer proceeded in a clear and lucid manner to explain the chemical decomposition which ensues during the process, and concluded by stating briefly its various chemical properties; the quantity consumed annually being about 60,000 tons, and the price 10 shillings per cwt.; the quantity of sulphur requisite to produce this quantity being above 15,089 tons, the oxygen being principally derived from the atmosphere; and the following use which is made of this extensive and valuable article of commerce, was stated, viz.:—for the production of Epsom salts, sulphate of silver, carbonate of soda, sulphate of mercury; for the preparation of calomel and corrosive

sublimate; for nitre, alum, chloride of lime; for dyeing, calico printing; sugar from starch; in tanning; in the arts and domestic economy; for the manufacture of blacking; in the purification of oils and tallow, ethers, alcohol, &c.

On the library table we observed the following articles:—Ostler's self-registering Anemometer and rain gauge, from Mr. Newman; specimens of optical glass, from M. Guinard, of Paris; colored films of lead, due to oxidation, from Mr. Cowper; skeleton forms of the different crystallographic systems, from Mr. Tennant; figures of selenite for the polarization of light, from Mr. Darker.

On the 8th of May, Mr. Faraday delivered a lecture on the "Force of Power in the Voltaic Pile."

LINNÆAN SOCIETY.

May 5th. The Bishop of Norwich, President, in the chair.

This being the meeting prior to the anniversary, the President called the attention of the members to the necessity of balloting for the auditors proposed by the council. The following gentlemen were unanimously elected: Thomas Bell, Esq., George Loddige, Esq., R. H. Solly, Esq.

The President stated that the address to H. R. H. Prince Albert (read at a former meeting) had been presented, and the letter from his Royal Highness's treasurer was read to the meeting.

Mr. Janson, F. L. S., of Stoke Newington, exhibited beautiful specimens of *Linnaea borealis* in flower, from his garden, and likewise specimens of *Chrysosplenium alternifolium*, *C. oppositifolium*, and *Dolichos tubia*. The two following papers were then read:—"Additional Observations on some New Plants allied to the Natural Order Burmanniaceæ," by John Miers, Esq., F. L. S.; and a "Continuation of an Arrangement of the Genera of Ferns," by Mr. John Smith, A. L. S., of the Royal Botanic Garden at Kew.

GEOLOGICAL SOCIETY.

April 29. Rev. Dr. Buckland, President, in the Chair.

Abraham Gesner, of Nova Scotia, Rev. James Cartnell, and A. S. Aspland, Esq., were elected Fellows. A paper was read by the Secretary, Mr. Hamilton, being "Geological Remarks on a few detached places in Ionia, in an excursion made in 1836." The geological features of the following places were described by Mr. H.—Fouges, Ritre, Teos, Scala Nuova, Cnidos, island and gulf of Syme (the great rendezvous of sponge divers), and Rhodes. The parts not described in this communication had been read on a former occasion by Mr. Strickland.

A letter from Mr. Drury Ottley, of Exeter, was read, in which it was stated that specimens of *Alcyonia* had been discovered in the red sand stone in the neighborhood, in a quarry two miles from Exeter, near the Bath road; and the only other spot in which they had been found is in another quarry not far distant.

Professor Owen read some notes on the fossil remains of a bird, lizard, and tortoise, in the chalk, near Maidstone. Of the bird, three portions had been found, the largest specimen was nine inches long, flat, and the angles rounded; it is different from the femur of any known bird in the proportions of its length with its breadth. Mr. Owen was of opinion that it most nearly resembled the humerus of the albatross, but it differed in the marked angles bounding its sides; from its structure and appearance, he considered it a humerus belonging to one of the longipennate birds. The second specimen was that of a Chelonian reptile. (*Emys*.) Mr. Owen entered into various interesting anatomical details, pointing out, from the

specimens exhibited, the characters which he considered of sufficient importance to enable him to arrive at his conclusions.

The President, in offering his remarks on the papers read, could but notice the occurrence of fossil remains of albatrosses from Kent; monkeys from the London clay; large serpents, near to Boa constrictors, in Norfolk; palms in the London clay; these he stated were striking facts as to these animals having formerly existed on the spot where they are now found; if such be the case, it proves the existence of a tropical climate in the country in which we now live.

On the table were specimens of tubular bodies in sandstone, from the Cape, presented by Sir John Herschel, (from all appearances the roots of plants.) Cubes of the stone recommended for the building of the Houses of Parliament by the scientific committee appointed for the purpose of investigating the matter, were exhibited; the durability depending to a great extent on their chemical composition, being composed of equal parts of carbonate of lime and carbonate of magnesia.

URANIAN SOCIETY.

Erratum.—In the paper on Kepler's Law (in our last), the minus character was omitted to be placed over the index of the Logarithms, in the Nos. 78539, &c., 52359, &c. It should be thus, 1.—

THE THEATRES.

"See that the players be well used."—*Hamlet*.

"Nothing extenuate, nor aught set down in malice."—*Othello*.

HER MAJESTY'S THEATRE.—*La Gazza Ladra* was performed here on Saturday night, for the second time this season; but we fear it has been very far from yielding to the exchequer that remuneration to which it is entitled.

After the opera, Mdlle. CERITO again drew upon her choreographic feats the applause of the whole house. *Otello* and the *divertissement* from *Une Nuit de Bal* were repeated on Tuesday night.

On this occasion, we were happy to see RUBINI restored to the stage earlier than we had hoped. Having exhausted on ROSSINI's great composition every encomium of praise, we could not but experience some surprise at the coolness with which certain of its brightest gems were received. Even the beautiful air, "Assiso a pie d'une salice," and the touching prayer, "Deh calma o ciel," failed to produce all their wonted effect; the only *moreaux* which produced an *encore* being the magnificent duet in the second act between RUBINI and TAMBURINI, into which those great artists infused the whole energies of their vocal and dramatic gifts. More fortunate than her vocal compeers, Mdlle. CERITO obtained an *encore* in her first *pas*, "La Lituanie," which she danced between the acts, and the same honor was conferred upon her performance in the *Nuit de Bal* which followed the opera. A marked void in the *corps de ballet*, said to be occasioned by the unexpected return across the channel of two fair daughters of Terpsichore, were the ruling topic among the *habitues* of the Opera. Many were the mirthful surmises as to the causes and consequences of this sudden eclipse, which is only the counterpart of another which, two months since, or thereabouts, was a subject of lubrication with our sly and jocose Gallic contemporaries.

HER MAJESTY, the QUEEN DOWAGER, Prince GEORGE OF CAMBRIDGE, and many others of the Nobility were present.

THE PRINCE'S THEATRE.—On Wednesday night, two new pieces were produced at this theatre, the one called *Das Nachtlager in Granada*, or *a Night in Granada*, an opera in two acts by CONRADIN KREUTZER, and the other an operetta, in one act, entitled *Kosciusko*, by VON HOLTER.

The plot of the opera is simple, and somewhat

melodramatic:—A certain prince loses his way, and his attendants in the chace, and comes to a sequestered village, where he is hospitably received by a pretty girl, with whom, naturally, he instantly falls in love—a freedom which is resented by a lover of the damsel, who, partly for revenge, and partly for plunder, resolves, with a couple of confederates, to murder the stranger in his sleep. After he has retired to rest, the girl, who has overheard the plot, contrives to put him on his guard; and the villains, who steal upon him in the night, find him prepared for their reception. He kills one, and beats off the others; and at this moment, his attendants make their appearance, guided by a young peasant, the favored lover of the rustic damsel. The prince, made aware of the state of her affections, overcomes his own passion, and unites the lovers! The story is common-place, but its effect on the boards is better than one would be led to suppose, and the spirit of true poetry breathes throughout the whole opera. The chorusses and the concerted music were, generally, excellent, with here and there a delicious morsel of rich, eloquent, and stealing melody, which quite delighted the audience. The author seems to have formed a kind of composite style, in which there is a good deal of DONIZETTI mixed up with WEBER. Herr PECK was the Jager, and Prince, and sang with great freedom and purity; and although his acting cannot be called graceful, yet it is withal manly and prepossessing. He was loudly applauded in the romance of the first act of the opera, beginning "Ein Schutzbir ich," and the recitative air, in the second act, "Die nacht ist schön," which he accomplished in a most masterly manner. The part of Gabrielle was sustained by Madame SCRUMANN, who, though not a first-rate artist, acquitted herself in a pleasing manner. The tenor, SCHEMEEZER, sang sweetly as usual, in the character of Gomez. The opera is the work of a clever musician, and was most creditably produced.

At the end of the opera, all three singers were called for, and the curtain was drawn up to allow the artistes to acknowledge the compliment.

The operetta Kosciusko was the afterpiece. It is a trifle hardly worth mentioning, and seemed to contrast strangely after KREUTZER's opera. A ludicrous burlesque was introduced at the end of the piece, of Napoleon inspecting a squad of Polish Lancers, as they sang in wild chorus; it was about as farcical a stage incident as we can recollect to have witnessed, and quite worthy of BUNN.

We advise the withdrawal of this enormity as early as possible, or thin houses will be the consequence.

COVENT GARDEN.—The season here is so nearly at a close, that no more novelties are expected. The last revival worthy of notice, is *Twelfth Night*, in which Miss Ellen TREE, as Viola, is the great attraction. She invests the character with all the tenderness and fine feeling it is capable of, with some few exceptions, among which may be mentioned the celebrated speech, *She never told her love, &c.* This was delivered in a set, formal manner, that greatly marred its intrinsic beauty. We the more regret this, as Miss Ellen TREE has much of nature in her general performances. She need only trust to her own feeling,—the effect must then be good. The Maria of Mrs. HUMBY was not the Maria of SHAKSPEARE. The part is quite out of this lady's line. She excels more in the quaint and simple. FARRIN hardly gave us an opportunity of judging how he read the character of Malvolio, for we heard great part of it uttered by the prompter. In his dumb show, habited in yellow stockings, and cross-gartered, he excited many a smile. The play is well got up, and will most probably be repeated once or twice before the final close of the season. Madame VESTRIS' benefit on Monday, produced her, as she states, £400. This must have been in the way of presents, as the house was but thinly attended at the first price. Towards the close of the evening, however, the new *spectacle* of the *Sleeping Beauty* attracted a tolerable number of visitors. The remainder of the season will be

devoted to "benefits." May they prove so, say we' in every sense of the word!

HAYMARKET.—The *Lady of Lyons*, *Hamlet*, and *Richelieu* continue very popular, so popular that no novelty is deemed necessary to supplant them. A new and very racy farce has just been produced here, called the *Irish Attorney*; the hero being a Galway practitioner, (POWE) who joins in partnership with a Yorkshire attorney (STRICKLAND). The one is a rattling, fox-hunting, pleasure-seeking, merry dog, who executes *wrds* by putting them on the fire, and *deeds* by the same "process," to the infinite dismay of the other, who is a gripping, hard-hearted limb of the law, and knows nothing whatever about *equity*. The laughable jokes, and good humor of the Galway lawyer, together with his ludicrous mistakes, explanations, and *éclaircissements*, contrast powerfully with the passion, fury, and resentment of the Yorkshire attorney. It is proved, however, in the sequel, that *honesty* is the best policy, and that *equity* is far preferable to *law*, the same results being produced by a widely-different process. Our modern lawyers should see this piece; they might learn wisdom from it;—we by no means say they *would*. We know better.

ENGLISH OPERA.—The return of the original band to this theatre, is hailed by the public with enthusiasm, and we venture to predict that the *Promenade Concerts* will be well attended throughout their summer season. The charge for admission being so moderate, a person having only half an hour to spare, would pass it here in preference to wandering about. The selections of music are very agreeably varied, and the solo performances are more attractive than ever. COLLINET's engagement has been renewed. He plays divinely. We never could have believed that such sounds could have been produced from such an instrument.

BRUSSELS.—The Italian Company at Brussels have brought out Bellini's opera of *Norma*, for the first time. The part of *Norma* was sustained by Mdlle. Mathey very successfully. Her principal fault is, that her acting and singing are too exaggerated for nature. The performance, on the whole, was not so satisfactory as some other representations by the Italian company; the actors were not perfect in their parts, and consequently could not feel themselves at home in the characters.

ADVERTISEMENTS.

TULIPS, RANUNCULUSES, ANEMONES, GERANIUMS, AURICULAS, PICOTEES, YELLOW PICOTEES, AND PINKS.

H. GROOM, WALWORTH, near LONDON, by appointment, Florist to Her Majesty, begs to recommend to the attention of the nobility, gentry, and public, his extensive collection of the above flowers which he can offer at very moderate prices. He particularly wishes to call attention to the hand-some remarks on his exhibition of Tulips this season in the various papers.

PRICED CATALOGUES can be forwarded, by post, on application.

COLLEGE for CIVIL ENGINEERS, GORDON HOUSE, KENTISH TOWN, LONDON.

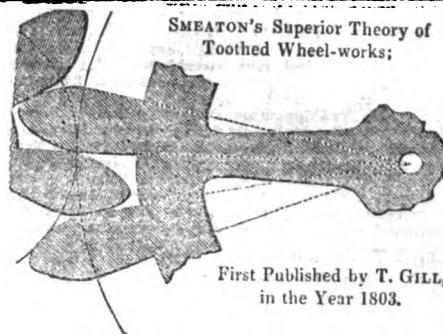
This Institution is now in operation.—Prospectuses and every information may be obtained on application to the Secretary at the office, 57, Pall-mall.

By order of the Council,

May 8, 1840. J. E. B. CURTIS,
Office, 57, Pall Mall. Secretary.

POST OFFICE STAMPS.—As the new regulations impose on writers of letters the necessity of affixing proper stamps according to weight, a LETTER BALANCE now becomes altogether indispensable. A newly-invented instrument called "DAMPIER'S PATENT GEOMETRIC BALANCE" is submitted to the public by J. G. HUGHS, 158, Strand, which most accurately and instantaneously accomplishes that object without the change of weights: And the principle of the invention being adapted to mechanics for shipping use, Trade, and Domestic purposes, Apothecaries, &c. &c. J. G. H. feels assures this instrument will be found worthy the attention of every class of persons, as being more simple and in every respect superior to any self-adjusting weighing machine hitherto introduced. 158, Strand (adjoining King's College).

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Mining Journal Office, 12, Gough-square, Fleet-street, 30th April, 1840.

NEW WORK ON THE IRON TRADE.

The Number of the MINING REVIEW this day published, contains the Fourth Part of the Paper on the IRON TRADE, by Harry Scrivenor, Esq.—this work will be completed in Twelve Monthly Parts, and so arranged as to form a separate volume at the end of the year; in addition to which the MINING REVIEW contains Suggestions for the Use of the Blowpipe by Working Miners, by John Pridgeaux, Esq., F.G.S., Cornwall (with illustrations); conclusion of the Inquiry into the Origin and Nature of Tin Bounds, by Frederick Hill, Esq., of Holston; Notice of the Copper Mines of Alten, Norway, by M. de Larocquette (late French consul in that kingdom); Review of the Second Report on the Geological Survey of the Province of New Brunswick, by Abraham Gesner, F.G.S.; Scientific Bodies, &c.—The MINING REVIEW is published at the office, as above, on the 1st of each month, price Sixpence.

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No. 42.]

SATURDAY, MAY 23, 1840.

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REVERBERATORY AND PUDDLING FURNACES.

What are the advantages and the disadvantages of a greater or less quantity of water in coal employed in furnaces? This question is considered in a recent number of the Journal *l'Ancre*, of which the following is an extract:—

Our readers know both by theory, and by every day's experience, that the fuel employed in blast furnaces remains in the depôts long enough to be saturated with water. In this state, the coal, being less inflammable, descends into the furnace without being consumed, until it arrives at the point where it commences to produce its useful action; but it must not be inferred from this fact, that water is necessary to effect the reduction of the ore, for that would be a great mistake. When the coal arrives in the middle of the furnace it becomes red hot, and it has then lost all the water that it contained, and then begins to act in reducing the ore. The quantity of vapourised water that passes out at the mouth of a blast furnace, which produces 3,000 kilogrammes of cast-iron in a given time, may be estimated at 1,000 kilogrammes. But all this water is in a state of vapor before its arrival at the hearth, therefore it does not act upon the melted mass; and if, as has been proposed, the whole or part of this steam were admitted into the crucible, the heat would be lowered in the same proportion. It would be requisite absolutely to diminish the quantity of the charge of ore, for the heat, instead of being employed in reducing the oxide, would be wasted in the decomposition of this steam. In a late article we showed that the reduction of carburets depended upon the same principles as the reduction of minerals; whence, we concluded, that in puddling furnaces, as well as in the crucibles of blast furnaces, the presence of water ought to be avoided.

The coal used for puddling and reverberatory furnaces, besides the quantity of water that it naturally contains, is so long exposed to the weather before being used, that it holds nearly as much water as it can absorb. When the workman throws it upon the grate, the water is at first disengaged with great rapidity in the state of vapor. If, as in a blast furnace, this vapor escaped without passing through the part where the metal is reduced, no damage would be done; but instead of doing so, it enters directly into the crucible where the metal is refined. The temperature of that part of the furnace is so great, that the steam cannot pass through it without being decomposed. All

the heat employed in this decomposition of the steam is, therefore, lost, consequently it would be more economical to dry the coals intended for puddling and reverberatory furnaces. All that we have said respecting puddling furnaces applies equally to refining furnaces, since the temperature is nearly equal in both.

What may be the amount saved by this plan of drying the coals, must be determined by experience. The humidity of coals varies beyond measure, therefore it is impossible to arrive at conclusions from such uncertain data; but there exists in manufactory numbers of means for the formation of stoves, so as to dry the coals by the heat lost in the furnaces. It would be sufficient to heat these stoves to 35 or 40 degrees of Reaumur, to dry the coals completely, without burning them, or expelling the carburetted hydrogen gas which they contain; and as experiments may be made without much expense, we recommend the managers of forges to try it.

PRESERVATION OF WOOD.

The Academy of Sciences, at Paris, has received many important communications in its recent sittings, among which were some extremely valuable researches of much practical interest by Doctor Bouchery, of Bordeaux, respecting the preservation of wood. The idea has been already conceived, of introducing by pressure into the interior of the woody fibres, different substances fitted to preserve the wood from the action of putrefaction and of dry rot, but the methods hitherto proposed for attaining this object, and the substances employed, render the process difficult, expensive, and of doubtful efficacy. Dr. Bouchery, a physician at Bordeaux, has discovered that when the trunk of a tree just cut down, is immersed in water, containing any substance in solution, it absorbs the liquid with the greatest facility, by a kind of powerful suction, which draws the fluid to the extreme ends of the branches, and even into the leaves; so that the fibres become completely filled with the solution, whatever it may be. This process, it will be perceived, consists in applying the vital force, by which a tree absorbs nutritious fluids from the earth, and which force it retains for some time,

after having been separated from its roots, to introduce into its myriads of vessels fluids capable of preserving it from destruction. The absorption, it is found, takes place equally well, whether the tree is plunged into the liquid by the trunk or by its top, providing it be not deprived of its leaves; and the fluid absorbed, when colored so as to enable its progress to be traced to the minutest parts of the tree, does not appear to follow the laws established hitherto by botanists for the direction of the sap. The discoveries of Dr. Bouchery will, in this respect, prove not less interesting to botanical physiology than in its practical applications.

Dr. Bouchery, having studied the progress of decay and destruction in different kinds of wood, is convinced that the woody tissues are destroyed by a kind of fermentation which takes place among the liquids they contain. If it were possible to extract these fluids, or at least to render them inactive by some chemical compound, the cause of the destruction of wood would, by that means, be removed. It is the latter plan which Dr. Bouchery carries into effect, by means of a substance which is very common, and may be produced at a cheap rate, which the arts produce in abundance, and which has not hitherto been made use of—the pyrolygous acid in the state of pyrolignites of iron. A number of experiments, performed more than a year since, in the presence of commissioners chosen from the most experienced persons in Bordeaux—upon wood, that, in ordinary circumstances decay in a few months, such as the hoops of casks placed in cellars—leaves no doubt of the efficacy of Doctor Bouchery's process. Other substances which can be introduced by the same action of nature, with equal facility and without more expense, preserve the suppleness and the elasticity of the wood into which they are thus introduced; others render the wood incombustible; other substances again, tinge the wood with the richest colors, and this peculiarity may be turned to good account by the cabinet makers. It is useless to point out at any length the immense practical use of such a discovery in the construction of houses, in ship-building, &c. In order to show more forcibly the importance of the invention, M. Ardouin reminded the Academy of the incredible ravages made at Rochefort by a small insect, scarcely visible, but which attacks the timber work in such numbers, and with so much avidity, as to threaten soon to destroy all the houses in the town. The new gallery of mineralogy in the *Jardin des Plantes* is attacked in the same manner. It is evident that the wood could not be attacked by insects if the aqueous fluids and juices were combined with a metallic salt by Dr. Bouchery's method, so as to destroy the nutritious properties of the juices of the tree.

FRAUDS IN SOAP.

The following extracts from a report to the Commissioners of Excise on the specific gravity of soap, can scarcely fail to be generally interesting, as explaining the frauds which may be practised in the manufacture of that necessary article:—"With regard to silica and clay soap, the experiments made by the writer of this report are not sufficiently numerous to give the requisite information; but as neither the silica nor the clay contributes anything to the detergent qualities of the soap, but merely increase its weight, all such additions ought to be prohibited by Government. Suppose a pound of good soap to cost 6d., and that another soap, containing 20 per cent. of silica or clay, is sold at 4½d., the two will be exactly of the same value, for four pounds of the good soap will go as far as five pounds of the adulterated soap. If the manufacturer charge 5d. for the pound of the adulterated article, he overreaches his customers to the extent of a farthing per pound. If this apparent cheapness have a tendency to increase the sale of soap, it operates as a premium to induce manufacturers in general to adulterate the article. The great extent to which the trade of Great Britain has reached, was originally founded on the goodness of the articles manufactured; the present rage for cheapness has an universal tendency to adulterate every article exposed for sale; and, unless it is counteracted by a vigilant Government, it must terminate in the destruction of the foreign trade of the country. The soap made for exportation is always of superior quality; hence the monopoly of the French soap-makers, who supply Italy, Spain, and South America with all the soap required by those extensive countries. If silica soap be permitted to be made, it ought to be charged according to its specific gravity, allowing it to contain 20 per cent. of silica, as the maker supposes it to do. Hence its specific gravity in the liquid state ought to be 1.3191. Hence a pound of it will have the bulk of 21016 cubic inches: or it ought to pay one-fourth more duty than common yellow soap. In what is called clay, soap the clay is not at all combined with the alkali, no soap is formed with it, and its action is merely mechanical; and in fact it diminishes the power of the soap with which it is mixed in proportion to the quantity. The motives for mixing clay with soap are too obvious, and too well understood, to require any comment."

ROYAL ACADEMY OF BRUSSELS.

The following are the questions proposed in the scientific class for the year 1841:—

1st. An essay on mathematical analysis, the particular subject being left to the choice of the candidates.

2d. To determine by experiments whether metallic poisons, such as white arsenic (arsenic acid) dug into cultivated land, penetrate equally into all parts of the vegetables that grow there, and enter into the grains of corn, and whether any danger to public health can arise from spreading white arsenic and other similar poisons on lands to destroy vermin.

3d. To describe the fossil shells and polypi of the cretaceous and tertiary strata of Belgium, and to point out precisely the places and the class of rocks in which they are found.

4th. To expound the theory of the formation of scents in flowers.

5th. To determine, by experiments, the changes that the blood undergoes in the capillary vessels of vertebrated animals, as well as the transformation of the constituent parts of the blood of those animals. To point out also the cause of these changes.

6th. To give a description of the fossil shells and polypi of the slate, the carboniferous limestone, and the coal formations of Belgium, and to point

out precisely the places and the class of rocks in which they are found.

7th. An essay on the vapors emitted by metals; and on the influence which some natural philosophers attribute to these vapors in certain meteorological phenomena.

8th. To point out the most convenient means of producing in inhabited places a ventilation adapted to the temperature which ought to be maintained there.

The prize for each of these questions is a gold medal of the value of 600 frs. The essays may be written in Latin, French, or Flemish; and must be addressed, before the 1st of February, 1841, to M. Quetelet, the secretary.

In addition to the above questions, the Academy has also proposed the following questions for 1842:—

1st. A complete examination of the state of our knowledge respecting atmospherical electricity, and the means employed at the present day of detecting the electrical phenomena which occur in the atmosphere.

2d. To discover by new experiments, and new observations, the influence which appears to be exerted by the quality and the temperature of the media in which crystalline bodies are produced, on the forms of those crystals.

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING MAY 16, 1840.

ENGLAND.

Not a single patent has expired during this week.

SPECIFICATIONS.

[The Gentleman who furnishes the LIST OF SPECIFICATIONS, is so totally incapacitated this week, by sudden and severe indisposition, that we are under the unavoidable necessity of deferring their insertion till next week.—Ed.]

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of June 27. Each party will receive, in addition, a private communication to the same effect.

Angier March Perkins, Great Coram-street, civil engineer, due June 16.

Jacob Brazill, Governor of Trinity Ground, Deptford, due June 16.

Henry Seymour, Vandeleur, Kilrush, Ireland, due June 16.

Samuel W. Faxon, Park Village East, Regent's-park, surgeon, due June 16.

Monnin Japy, and Constant Jouffroy Dumfry, George-yard, Lombard-street, due June 16.

David Morrison, Wilson street, Finsbury, ink-maker, due June 16.

David Naylor, Copley-mill, Halifax, manufacturer, and John Crighton, jun., machine-maker, due June 16.

George Wilson, Salford, machinist and engineer, due June 16.

John Robinson, North Shields, engineer, due June 16.

James William Thompson, Turnstile-alley, Long acre, upholsterer, due June 16.

William Newman, Birmingham, brass founder, due June 16.

Joseph Gibbs, Kennington, engineer, due June 21.

George Lindsay Young, Hackney, due June 21.

Henry Francis Richardson, Troumonger-lane, London, due June 21.

John Cutts, Manchester, machine-maker, and Thomas Spencer, of the same place, mechanic, due June 21.

FOREIGN PATENTS.—FRANCE.

A LIST OF PATENTS GRANTED BY THE FRENCH GOVERNMENT IN DECEMBER, 1838.

(Continued from No. 41.)

No. 318. Blondeau de Carolles, Charles Constant, Aix, département des Bouches du Rhone, a patent of invention for 5 years, for a gas-meter, Dec. 27, 1838.

319. Boulle, Armand Michel, of Villiers le Môtier, département d'Eure et Loir, a patent of invention for 5 years, for an apparatus for the purpose of preventing evaporation in flour mills, Dec. 27, 1838.

320. Boutan, Auguste, and Ingé, Louis Marie Etienne, of Paris, rue Notre Dame des Victoires, No. 38, a patent of importation and improvement for 15 years, for a digging machine, and a complete system of terracing, Dec. 27, 1838.

321. Busset, François Charles, of Paris, rue Sainte Anne, No. 42, a patent of improvement and addition to the patent of invention and improvement which he obtained March 27, 1838, conjointly with Louillet, for new means and processes of printing music, Dec. 27, 1838.

322. Camus, Laurent Denis, of Paris, rue de la Grande Truanderie, No. 36, a patent of invention for 10 years, for a manufacture of felts for roofing buildings, Dec. 27, 1838.

323. Carpentier, Jacques Frédéric, and Duboc, Michel Amable, commune de Bois Guillaume, arrondissement de Rouen, a patent of invention and improvement for 5 years, for a new mode of collars, called "collars à la Nemours," adapted to equipages, cabs, chaises, artillery, and agriculture, Dec. 27, 1838.

324. Chamoroy, Edme Augustin, of Paris, rue Faubourg Saint Martin, No. 136, a fifth patent of improvement and addition to the patent of invention and improvement for 15 years which he obtained Aug. 9, 1837, for the manufacture of conduit pipes, tubes, and hollow bodies of asphalt, or mineral bitumen, in combination with various flaxen, fibrous, animal, or vegetable substances, Dec. 27, 1838.

325. Chapuis, Nicolas, of Paris, rue du Faubourg du Temple, No. 46, a patent of invention for 5 years, for a new system of forming roofs of factitious states, Dec. 27, 1838.

326. Fowell, Francis Kirkham, of Boulogne sur Mer, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of invention for 10 years, for a new compound combustible matter, which he calls "coke chandelle," or "à flamme brillante," Dec. 27, 1838.

327. Franchot, Charles Louis Félix, of Châteaudun, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of invention and improvement for 15 years, for an alternating air-engine for producing rapid changes of temperature in a gaseous centre, in closed glass, and for transmitting externally and regularly the motive power resulting therefrom, without any contact of the gas with the floating surfaces and joints, Dec. 27, 1838.

328. Gillet, François, of Troyes, a patent of invention for 5 years, for a circular frame for manufacturing ribbed knittings, Dec. 27, 1838.

329. Graenacker, Xavier, of Cobmar, address at Paris, passage du Pont Neuf, hôtel d'Italie, rue Magazine, No. 46, a patent of invention for 10 years, for principles, means, and processes of sculpturing in wood, Dec. 27, 1838.

330. Hertzick, Georges, of Paris, Petite Rue Saint Pierre, No. 18, a patent of importation for 5 years, for a new kind of straps (under leathers), Dec. 27, 1838.

331. L'Hote, Jacques Charles Joseph, rue de Metz, à la Petite Villette, precincts of Paris, a patent of invention for 5 years, for processes of manufacturing Roman cement, and hydraulic bricks without baking, Dec. 27, 1838.

332. Mareschal, Jules and Co., of Paris, rue de la Planche, No. 20 bis, a patent of improvement and addition to the patent of invention for 15 years which they obtained March 31, 1838, for the manner of arranging the filtering substances for means of retaining them in the filtering apparatus, air-tight, submitted to any degree of pressure, produced either by a vertical column of liquid, or by hydraulic pumps, presses, by steam, or by the atmosphere, when the equilibrium is destroyed by a vacuum, or by any machine capable of producing pressure, Dec. 27, 1838.

333. Mareschal, Jules and Co., of Paris, rue de la Planche, No. 20 bis, a third patent of improvement and addition to the patent of invention for 10 years which Fonvielle obtained Nov. 27, 1835, for a movable apparatus for filtering water, the improvement being the application of the said apparatus to purifying oils and clarifying wines, vinegar, alcohols, brandy, beer, cider, syrups, and all other liquids, which require to be clarified, Dec. 27, 1838.

FOREIGN CORRESPONDENCE. (FROM OUR OWN CORRESPONDENT.)

FRANCE.

The Pharmaceutical Society of Paris, this year, proposed two important questions for prizes; the first, relative to the composition of the *polygonum tinctorium*, and the best means of extracting the coloring matter (indigo) from it. It is known that this plant, which has been recently imported into Europe, contains a certain quantity of indigo, and it is a question whether its cultivation in France, might not prove advantageous. The essays sent in, without positively deciding this question, were considered to throw so much light on the subject, that the society divided the amount of the prizes among the authors of the three principal essays; M. Osmin Hervey, of the School of Pharmacy, had a gold medal of 1,000 francs.; Messrs. Girardin and Preisser, professors of chemistry at Rouen, had a medal of 400 francs.; and M. Bor of Amiens, a medal of 100 francs. The second question proposed by the society was the consideration of pectine, and its transformation with pectic acid. The prize of 1,000 francs. for this essay, was awarded to M. Edmond Fréméy, a young chemist of great promise.

TRANSATLANTIC STEAM-BOATS.

M. Thiers presented a project of law for establishing different lines of transatlantic steamers between New York and Havre, and from Bordeaux and Marseilles to the Havannah.

The following is a translation of the proposed law:

"PROJECT OF LAW.

"Art. I. The Minister of Finance is authorised to form a contract with a mercantile company, for the purpose of forming a line of packet steamers between Havre and New York; the said company undertaking the transport of letters, on receiving an annual salary, not exceeding 1,200,000 francs.

"The number of packets to be employed on the

station must not be less than five, all of which are to be at least 400-horse power.

"A list of prices will be drawn up by the Administration for everything connected with the working of the above-mentioned station.

"Art. II. A special credit of 25,000,000 is granted to the Minister of Finance, and is to be divided as follows:—

"For 1840	5,000,000
1841	10,000,000
1842	10,000,000
25,000,000	

This credit of 25,000,000 francs. is for the building and equipping 12 steamers, 450 horse power, and four steamers 220 horse power.

"These 16 steamers are to be built for the state, and are to undertake the conveyance of letters between France and America by two principal lines; one line of steamers starting alternately from Bordeaux and Marseilles for the Havannah, by Martinico, Guadalupe, St. Thomas, Porto Rico, and San Jago de Cuba; the other from St. Nazaire to Rio Janeiro, by Lisbon, Gorea, Fernambone, and Bahia.

"These secondary lines are to be worked by steamers, 220 horses, at the expense of the state; the one between the Havannah and Mexico, touching at Vera Cruz, Tampico, and New Orleans; a second between Martinico and Central America, passing by Chagres, Carthagena, Santa Marta, and La Guayra; and the third between Rio Janeiro, Monte Video, and Buenos Ayres.

"Art. III. Government steamers are to be built so as to carry artillery, if necessary, and to receive merchandise when acting as packets.

"In this last case, on board each ship there is to be an agent, specially charged with every detail connected with the service relating to passengers, goods, gold, silver, and letters.

"Art. IV. Government may place at the head of the packets under its control, officers of the navy, or captains of merchantmen, as it may consider most beneficial.

"Art. V. The articles of section 4, of book 2, of the code of commerce, relative to the responsibility of the captain, &c., are not applicable to the captains of vessels under the control of Government. The meaning of the above articles, respecting goods on board, and everything connected therewith, are made applicable to the commission agent charged with the administrative service on board the packet.

"Art. VI. Ordinances in the form of regulations of public administration, shall fix the details of the service of packets under the control of Government.

"Art. VII. Steam packets under the control of Government shall be assimilated to ships of the navy, and the service of sailors on board shall be reckoned as if it had been made in the navy.

"Art. VIII. Royal ordinances inserted in the bulletin of laws shall fix the postage of letters, journals, gazettes, and printed papers, conveyed by the French Trans-Atlantic packets.

"Art. IX. The expenses authorised by Art. II. of the present law, and chargeable on the grant for 1840, shall be met by the resources granted for the ways and means of that year by the law of August 10, 1839.

"Art. X. From 1842, the state budget shall include the demand of a supply, necessary for the working of the line of steamers under the control of Government, and for the payment of the allowance granted to the Havre Company.

"The sums arising from the working of these lines, postage of letters included, are to be estimated in the law of receipts."

THE BANK OF FRANCE.

(From the *Journal des Débats de Monday*.)

The capital of the bank was originally 90,000,000 francs. It has been reduced to 67,900,000 francs. Is

this diminished capital sufficient for the task which it has undertaken? Can the wants of French commerce be met with such limited resources? The bank is now engaged, with praiseworthy activity, in increasing its branch establishments in the departments, and, with the immense reserve of 200,000,000, accidentally placed at its disposal by the Treasury, it can do this without difficulty; but it is quite evident that this reserve is gradually diminishing. How will the bank feed its branch establishments when these State deposits shall have been withdrawn? How will it be able to do so if, as the committee recommend, it is to be prevented from increasing its power of action by the extension of the circulation which would result from the emission of notes of 250 francs. and 150 francs. each?

(From the *Courrier Français*.)

We do not require that the Bank of France should reduce the amount of its operations, or that of its notes. Far from this, we think there should rather be an extension of credit. But the public have a right to insist that even for the maintenance of its present circulation, the bank should augment its capital. This capital was in its origin 90,000,000; the bank, whilst developing its discount and loan operations, has bought back 22,000 shares. The capital at present, increased by the reserve, and including the value of the building in which its business is carried on, is only 82,000,000. We think it ought to be 120,000,000, and that, on the creation of every new branch bank in the departments, 2,000,000 more should be added to the capital. Such a measure would probably check the rise in the shares, but this would be a public benefit, for it is scandalous that bank shares should, according to the quotations of the Bourse, represent a fictitious capital of 230,000,000, whilst the real capital is only 82,000,000.

M. LAFITTE'S JOINT STOCK BANK.

The report of M. Lafitte's bank, for the month of April, has just been published, and it is pleasing to have to announce that this young and important concern, in spite of the crisis of the moment, which has obliged the directors to act with more than usual circumspection, continues to improve, as will be seen from the following data:—

Receipts	133,000,000
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Expenditure	131,000,000
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Balance in hand	2,000,000f.
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On the 1st January, the bank had in hand, bills amounting to the sum of	20,000,000
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It has since received the value of	100,000,000
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Giving a total of	120,000,000f.
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Since issued	100,000,000f.
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Leaving in hand at the end of April	20,000,000f.
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The discount has been in bills on	
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Paris	32,000,000
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On the departments and foreign countries	11,000,000
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Total	43,000,000f.
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Bills received from correspondents	57,000,000
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Total amount of bills discounted	100,000,000f.
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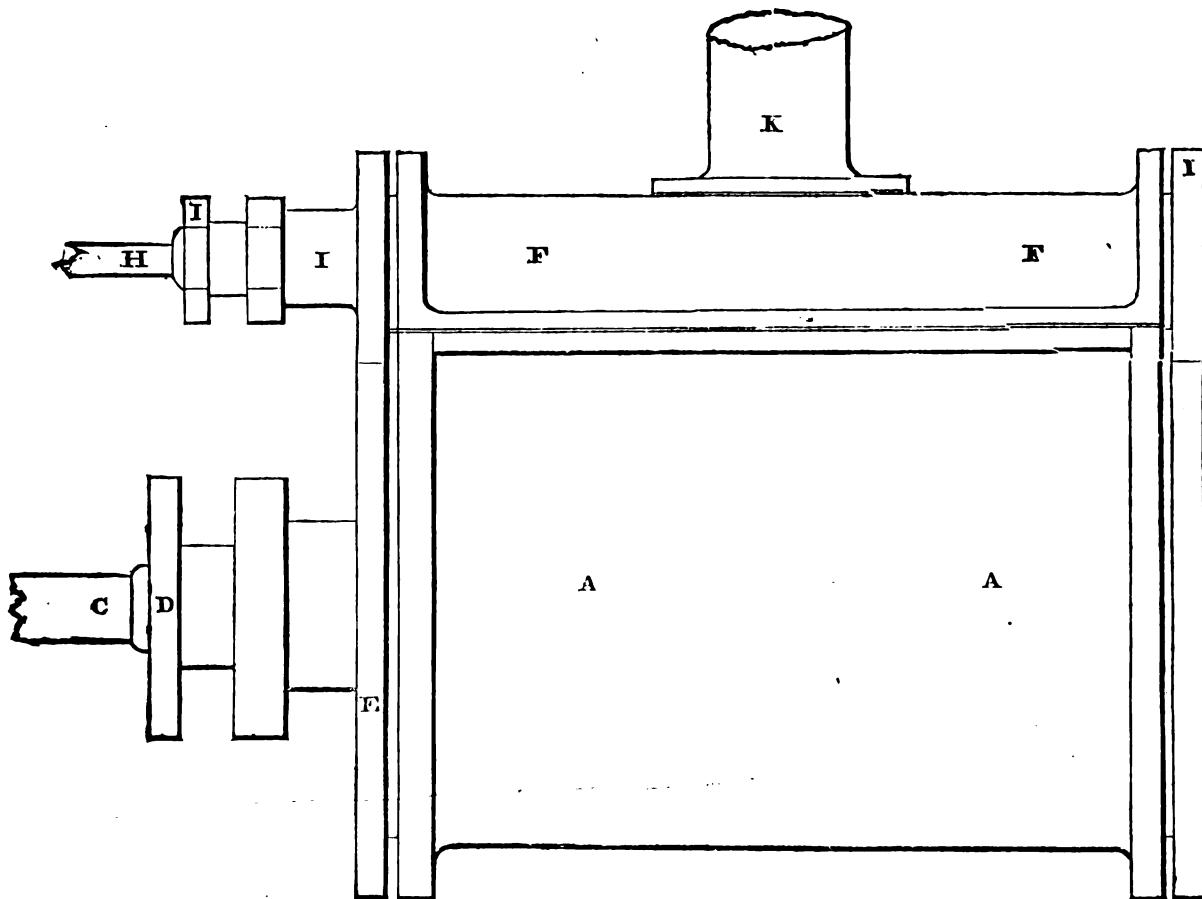
To the 57,000,000f. worth of bills received from the departments, can be added 14,000,000f. which have not been reckoned on account of their falling due in a few days, and have been considered as cash. Thus the real amount of the bills received from the departments, during the four months just expired, is 71,000,000f.

COPENHAGEN.—The number of ships of all nations that passed the Sound in January, February, and March, was, from the North Sea, 387; from the Baltic, 321—in all 708. Of these, 102 were English, viz., 90 from the North Sea, and 12 from the Baltic.

LOCOMOTIVE ENGINE ON THE BELGIAN RAILWAY.—Figure 2.

TRAFFIC ENGINE.

ELEVATION OF THE CYLINDER.



For an explanation of the references, our readers are referred to the Section of the Cylinder, given in No. 40, the same letters being used in both instances.

STATISTICS OF BELGIUM.

The department of the Interior has just published a fifth *Collection of Statistical Documents of Belgium*. It is the most complete of those which have yet appeared. We need not endeavor to demonstrate the advantage of these annual publications, it is not doubted by any one; and the use that may be derived from them by the legislative chambers, by commercial men, by manufacturers, and by persons who devote themselves to the study of political economy, has long been recognised in Belgium. The division of these tables is very simple, and is pointed out by the nature of the work; in fact, to render an account of the situation of a country is to make known its physical condition, the state of its commerce and manufactures, and its political and moral condition. It is this that has been done.

Under the head of *physical condition* is comprised, first, the extent and division of the territory; second, the meteorology, indicating the pressure of the atmosphere, the temperature, the moisture, &c., &c.; third, the roads and bridges—that is to say, a description of the canals, navigable rivers, roads, bridges, railways, comprising the produce of these means of communication, their development, the

cost of their construction, preservation, &c.; fourth, agriculture in all its details; fifth, the population, calculated with an exactness hitherto unknown; sixth, the sanitary regulations.

The state of manufactures and commerce of the kingdom forms the largest portion of the collection, and it is, at the present time, the division that attracts the most attention. It contains all that refers to foreign relations, the amount of imports, particularising each country from which they are imported, the exports, the transits, the warehouses, the navigation, the patents of invention, of importation, and of improvement, the fairs and markets, &c.

The third division, referring to the political state of the country, presents a rapid and well arranged *tableau*, in which the military forces, the finances, the town dues, the administrative and judicial organisation of the kingdom, pass under review.

The collection concludes appropriately with the exposé of the moral condition of the nation. It comprehends acts of charity and humanity, the condition of public instruction, the statistics of crimes and offences, &c.

Though these tables are in many respects imperfect, especially as regards the state of public instruction, we cannot but admire the zeal which induces the government to place annually in this manner before the eyes of the people, a faithful account of the position, the wealth, the resources,

the progress of the country, and of all that is still wanting to enable it to hold its proper place among the constitutional nations of Europe.

VIENNA.

The importance of iron railways, in a military point of view, has at length forced itself upon the notice of the Continental governments. The royal consent has just been given for the construction of the railway long since projected between Venice and Milan. The house of Sina and Co., of Vienna, is said to be willing to undertake the arrangements for furnishing capital for the railroad from Vienna to Trieste, the most difficult of all these undertakings, but that which the government is most desirous of seeing carried into effect. The works on the grand Hungarian line from Vienna to Preßburg, Pest, and Debreczin, are to be commenced immediately. The greatest difficulty to be overcome in all these undertakings is caused by the high price of the rails, and the limited quantities in which they can be furnished by the manufacturers of the country. The rails of Styrian or Carinthian iron and steel are of very superior quality—too good, in fact; for the hardness of the metal is a disadvantage in point of friction; while English rails, made of an inferior



but softer metal, and which could be furnished at a much cheaper rate, are almost excluded by the high protecting duty. Would not an exchange of these metals prove of mutual advantage?

The Prussian ministry, which so long discouraged these undertakings, is now giving every assistance to companies who propose to unite Berlin with the Rhenish provinces by means of railroads. The Russians project a line from the Baltic to the frontier of Galicia, where it will unite with the Northern Austrian Railway. Thus, at no very distant period, we may expect to travel in a few days from the Baltic to the Adriatic.

It is projected to unite the government of Illyria with that of Austria, but with the exclusion of the Styrian coast of the Adriatic, which is to be united with Dalmatia. The latter change would simplify very much the commercial relations of these different countries, and might facilitate the frequenting of the fine harbours of Istria and Dalmatia by foreign vessels.

A law for the protection of copyright in works of art and printed documents was passed, and gave occasion to a warm discussion on the freedom of the press, in which the speech of the minister, Von Abel, expatiating on the evils of this liberty, was a unique specimen of conservative eloquence.

The treaties concluded by the German Customs' League with the kingdom of the Netherlands, the Hanoverian League, &c., were submitted for the approval of the Chambers, as well as the alteration in the tariff agreed upon at the late meeting at Berlin. These were agreed to, and the power was conceded to the government to make all alterations which it might deem fit in the tariff during the next three years; the said alterations to expire with the next meeting of the Chambers, and to require their legal assent. The same power was conceded with respect to the tolls on the public roads, with a view to a general arrangement on this subject, expected to be adopted by all the states of the leagues.—*Morning Chronicle*.

SWEDEN.

STOCKHOLM, APRIL 28.—On the 28th a deputation from almost all the dealers in manufactures of silk, cloth, &c., had an audience of his Majesty to present humble remonstrances against the new tariff of customs which has been laid before the Diet, and especially against the entire abolition of all laws absolutely prohibiting importation. The following is his Majesty's remarkable answer:—

"Gentlemen—Ever since my arrival in Sweden, I have thought of means to promote the interest of the several branches of the national industry. I have found that the severity of the climate gives us no hopes of competing with success with foreign countries, and that the breeding of sheep is the branch to which we must particularly turn our attention. The first attempts have been successful, but our progress in the production of wool is still insufficient for the wants of the country. By continued perseverance in increasing our flocks, we shall, I hope, attain the independence without which it will never be possible to compete with importation from abroad. Other raw materials, such as silk and cotton, will hardly be cultivated in our climate. The difference between silver and bank notes, which burdens us with 80 per cent. on every silver dollar, shows how very necessary it is to protect manual labor, which is the chief means by which so many laboring classes gain a livelihood. From what I have now said, you will conclude, gentlemen, that I consider it as my duty to devote my attention to all the branches of our domestic manufactures. Several of them have too much influence on each other. There are some which are even directly opposed to each other. On one side, prohibitions are called for; on the other, directly the reverse. Herein is the great

discrepancy; yet it is possible to satisfy all, if each will contribute to a common arrangement; and for this nothing is required but good-will, justice, and patriotism. Agriculture and the improvement of the forests, the sources of our prosperity, united with concord and obedience to the laws, raise, if not to a place among the most brilliant nations, yet to the first place among the happy ones. I repeat to you, gentlemen, the assurance of my royal favor.—*Morning Chronicle*.

NEW ZEALAND.

A public meeting, called by the Lord Provost, in compliance with a requisition signed by a great number of merchants, bankers, shipowners, and others, was held in the Assembly Rooms to-day, at two o'clock, for the purpose of petitioning her Majesty and both houses of Parliament to adopt immediate measures for asserting the right of the British Crown to the valuable islands of New Zealand, subject to the rights of the native inhabitants—preventing any aggression by the French, who threaten to establish a convict colony in the country, or by any other power—and for establishing British law and authority for the protection of our countrymen who have already gone, and the numerous body who are preparing to follow, to settle in New Zealand, as well as of the native inhabitants, who have often expressed their anxious wish for such protection, by the exercise of British Sovereignty. Baile Mitchell, in the absence of the Lord Provost, was called to the chair. The meeting was addressed at great length by Mr. Alexander Johnson, Captain McDonald, Dr. McLeod, Sheriff Alison, and other gentlemen, and resolutions in accordance with the object of the meeting were unanimously adopted.—*Glasgow Chronicle*.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

MIDLAND COUNTIES RAILWAY.—The directors of the Midland Counties Railway took their first trip upon the line from Leicester to Derby, on Monday last, previous to the opening to the public. They were highly delighted with their excursion; and, after surveying the different parts of the station, partook of an elegant dinner at the Royal Hotel, where the wines and superior accommodation gave general satisfaction. The line from Nottingham and Derby to Leicester was opened on Tuesday, and we anticipate that numbers will avail themselves of the facility which will thus be offered, not only for the transaction of business between those manufacturing towns, but also for a delightful trip on one of the most beautiful, varied, and picturesque lines of railway which the country can boast. The greatest activity is manifested on this line between Leicester and Rugby, and such is the progress made, that the whole line will be opened in a few weeks.—*Derby Chronicle*.

OPENING OF THE NORTH MIDLAND RAILWAY.—The North Midland Railway was partially opened for traffic last week. On Saturday morning, preparatory to that opening, the directors took a trip along the line, starting about eleven miles from the terminus at Leeds, and traversing it with an engine the whole distance from that point to Derby, where they held a board meeting on the same day. But although the line is in a condition to be traversed from Derby to the immediate neighborhood of Wakefield, the portion opened to the public extends only from Derby to Rotherham, a distance of about forty miles, giving, by means of the Sheffield and Rotherham Railway, an uninterrupted railway communication from Sheffield to Derby; from thence by the Midland Counties Railway to Nottingham and Leicester; and by the Birmingham and Derby Railway to Birmingham and London.

SUCCESS OF THE LONDON AND BIRMINGHAM RAILWAY.—Upon no railway has the progressive

increase of traffic been more noticeable than upon the London and Birmingham line. The traffic last week produced upwards of £15,000, which is an increase of nearly forty per cent. upon the receipts for the corresponding week of last year. Of course, the partial opening of the North Midland Line, which took place on Monday last, and its opening throughout, which will not be long delayed, must add materially to this company's revenue. One day last week, no fewer than eighty-six carriages reached the Euston Station in four successive trains, and such are the admirable arrangements of the company, that in ten minutes from the coming in of the heaviest of these, the arrival platform was as clear of passengers and luggage as if no train had reached the station that day.—*Railway Times*.

The reports on the best means of effecting steam communication between London and Dublin have just been printed, and placed in the hands of honorable members. That portion which relates to the railway is a document of some length, and exhibits in a most favorable light the talent and energy of Sir Frederick Smith and Professor Barlow, upon whom the whole of the labor devolved—Colonel Cunningham having retired from the inquiry at an early stage, in consequence of ill health. The commissioners have evidently given the most minute and constant attention to the numerous questions involved in the selection of a railway route to the coast, and although our prepossessions were certainly in favor of one of the rejected lines, we are sure that the choice they have made will be confirmed by all impartial and disinterested individuals. The report is judiciously confined to facts, and as very many of these relate to matters of minute detail connected with particular localities, the publication of the entire document would not be generally interesting, even could we afford the necessary space, or render the comparisons complete without the appendices and plans which accompany it. The result we stated last week, namely, the selection of the line proposed by Mr. George Stephenson, via Chester and Bangor to Holyhead. The decided preference shown by the naval committee to Holyhead as the packet harbour, has tended very materially to influence the decision of the railway commissioners. The passage of the Menai Bridge, which has been urged as an almost insuperable obstacle to the construction of a Holyhead Line, the commissioners do not appear to regard as involving any great practical difficulty. The route being now laid down, we trust that immediate steps will be taken to carry out the recommendations of the commissioners. There seems to be but one opinion as to the remunerative capabilities of such a line, and all fear of opposition from rival projects being removed, we cannot doubt that subscribers will be found in abundance. How much better it is, by the way, that the claims of the competing schemes should have been investigated and determined upon in this manner, than by the tedious, troublesome, and most expensive process of a parliamentary committee, not one member of which we venture to say, without fear of a breach of privilege, would have been one-twentieth part so well qualified to discriminate between conflicting pretensions as either of the eminent gentlemen above named. We take it for granted that every facility will be given by parliament to the promoters of the Holyhead Line, so as to prevent all needless delay in effecting this great national improvement. As there is, we believe, little (if any) opposition on the part of landowners, a suspension of the standing orders would probably cause no practical injury. We trust that ALL will now unite in forwarding the undertaking, whatever preference they may have shown or felt heretofore for any of the projects which have been deemed upon the whole, less advantageous to the public.—*Railway Times*.

CROYDON RAILWAY.—We have received information that at the Norwood Station booths are erected for drinking and smoking, and a board put up, stating that they who use the railway are at liberty to fish in the Company's canal (that is a part of the Old Croydon Canal) free of expense. The consequence is, the most disgusting scenes every Sunday,

Here are to be seen parties fishing; there, others drinking, smoking, swearing, and some rolling about in the most beastly state of intoxication. Upon a fine Sunday, the place has all the revolting character of a Greenwich fair, and is become a perfect nuisance to the neighborhood. If the Company are the authors of this conduct by having built the booths, as it is said they have, there can be but one reason for it, namely, the mean and mercenary one of increasing their receipts at the expense of every thing decent and orderly—a motive disgraceful to them as a body of men. We have heard that a most influential member of the direction is a professed atheist, and glories in proclaiming it. We hope it is not so—but if it be, we need look no further for an explanation of any outrage on decency and propriety this company may commit.—*Railway Mag.*

MANCHESTER, BOLTON, AND BURY RAILWAY.—A special meeting of shareholders of this railway has just been held at the Clarendon Rooms, Liverpool. There were about twenty gentlemen present. Mr. John Robinson, on being called to the chair, said that the meeting had been called with a view to devise some means by which to reduce the expenditure in salaries and wages on the line, which were so great as to be seriously injurious to the interests of the shareholders. He should be glad to hear any proposition on the subject. Mr. Ratcliffe said, he had taken some pains to obtain information on the subject, and found that out of a half-yearly income of £18,780, the salaries and wages paid were no less than £3,094, without engines; or in other words, 15 per cent. upon the whole. This line would be prosperous, if it were economically managed, and he would propose that a sub-committee should be appointed to inquire into every department of the management, and afterwards call together those now assembled, and communicate to them the result. He instanced the excellent effect such a step had with regard to the St. Helen's Railway, and concluded with a motion that the sub-committee be appointed as suggested....Mr. Rigg said he did not think such a step would result in benefit, and suggested that steps should be taken to bring about an amalgamation with the Manchester Railway Company, as the Crewe Company did with the Grand Junction. This proposition was not relished by any of those present; and the motion being put, was carried unanimously. The names of seven gentlemen were then severally proposed and seconded, to be of the committee, with an understanding that when they had obtained the requisite information, they should call together the shareholders then present. The meeting then dispersed.—*Leeds Intelligencer.*

BRIGHTON RAILWAY.—We understand that at the opening of this line the Eagle engine, made by Messrs. Rennie, performed the distance, six miles, from Brighton to Shoreham, with a train of 200 passengers, in $8\frac{1}{2}$ minutes, and back again in 10 $\frac{1}{2}$. The first day of opening, 1,678 passengers were carried between the two towns.

FATAL ACCIDENT ON THE SOUTH WESTERN RAILWAY.—The passengers from Falmouth and Exeter arriving at Southampton at five o'clock for the up train to London on Sunday, as well as those proceeding from Southampton, were delayed for an hour at the station, owing, as it was stated, to the non-arrival of the down train. As the train left London at ten, and should have arrived at two o'clock, it was apparent that some accident must have occurred, and anxious inquiries were made to ascertain the particulars. It at length became known that the train had got off the rail, and that the engineer and the stoker had been killed, and the rumor was confirmed by the arrival of the train at six o'clock, when notice was given that the up train would start, which it did, arriving in London at twenty minutes before ten o'clock without any obstruction. The accident to the down train happened between the Andover and Winchester station, about five miles from the latter. It appears that a portion of the iron rail got displaced, whereby the train was carried off the rail; and the engine separating from the tender, fell back

upon the first carriage, two of the passengers in which were bruised, but not very seriously injured. The engineer and stoker—one of them a married man—fell under the engine at the moment, and were killed on the spot. From the inquiries we were able to make, it did not appear that any blame attached to the engineer, who was an experienced man of the name of Armstrong; it was entirely an accident, occasioned by the displacement of part of the rail. How this was occasioned, will of course be explained. Horses and men were employed to remove the broken engine, and another engine arrived from Southampton to take the train on, and all was cleared before the mail trains came down on Sunday night. As accidents will occur on railroads as well as by coaches, we think some provision should be made at a few of the stations on the line, to furnish passengers, in cases of protracted journeys, with at least a glass of water. On the road, passengers delayed by an accident can have recourse to a neighboring inn, but no such opportunities are afforded on the railroads; and it appears that the passengers coming up, who, expecting to be in town at eight o'clock, had taken nothing but a slight luncheon at two, could not, on the whole line of road from Winchester to London, obtain a glass of water at any of the stations.

RAILWAY TO FALMOUTH.—The importance of a railway to the town of Falmouth may readily be seen from the fact that twenty-four vessels from foreign ports arrived off and in the harbor in one day last week. It is stated that no fewer than three hundred and forty-one vessels from foreign ports called at Falmouth for orders in the course of last year.—*Railway Times.*

On Monday last, as the up mail train on the Great Western Railway was approaching Maidenhead, the engineer perceived a number of sheep lying down upon the rails; he put on the steam whistle to alarm them, and checked the engine, but was unable to prevent the train from passing over 22 of the poor animals, many of which were killed on the spot, and the others so maimed that they were immediately afterwards slaughtered: it appears that in the course of the night the sheep had strayed from their enclosure and climbed the embankment.—*Reading Paper.*

LANCASTER.—We have just seen a plan of the great scheme proposed by Mr. Hague, the engineer, of the proposed embankment over Morecombe Bay, to which is united the project of forming Lancaster into the finest port on the western coast of England. Mr. Hague proposes to carry the Lune by a canal 150 feet wide, to be cut through the level land from Oxcliffe to Poulton, where the waters joining those of the Kent in the bay, would sweep out a deep navigable channel capable of bringing up the largest vessels. He also proposes to form a floating dock at Lancaster, to contain twelve acres, having at all times twenty feet of water, with a ship lock to take ships in and out. Another great feature in the plan is the vast accretion of land. In addition to 52,000 acres enclosed by the embankment, Mr. Hague expects 20,405 acres to accumulate on the outside of the embankment, and 26,581 along the shores from Poulton to the Wyre. The following is Mr. Hague's estimate of the expense and profits:—

New channel from Lancaster to Poulton..	£76,873
Land to be purchased.....	19,200
Floating dock at Lancaster.....	33,000
Expenses in training the rivers and embankment	38,252

Land reclaimed 26,581 acres, at 25/- per acre 664,925

Profit £500,200

—*Lancaster Guardian.*

REVISION OF RAILWAYS.—Lord Seymour on Wednesday, entered upon the Commons books a notice that, June 2, he would move for leave to bring in a bill to establish a *superintendence of railways*.

An agreement has just been signed between the Belgian government and the Rhenish railway com-

pany, by which, in addition to stipulations of the agreement of the 18th October, 1839, the company engages to finish that portion of the railroad from Aix-la-Chapelle to the Belgian frontier, as quickly as possible, without having recourse to any fresh demand on the Belgian treasury; and that before the Belgian government is called upon to pay the 12th, 13th, and 14th instalments, the directors must prove that one half at least of the funds previously paid has been applied to the works between Aix-la-Chapelle and the frontier of Belgium. A law has recently passed, authorising the Belgian government to purchase 4,000 shares of this railway.

It is stated in a letter from Milan that the railway of Monza is so far completed, that it will be opened by the end of July next. It is proposed to extend it from Monza to Bergamo.

The *Organ des Flandres* says, a French engineer has arrived at Ghent, charged by his government to arrange with ours for the commencement of the works on the railroad from the Belgian frontier to Lisle. It is expected that the railroad as far as Roubaix will be opened in the course of next year. That from Roubaix to Lisle, owing to some extraordinary works required on it, will not be completed before 1843.

The commissioners of railroads, at a recent sitting at Paris, adopted an important resolution relative to the railroad from Basle to Strasburgh. They determined to substitute for the plan of taking shares, which was the project of the French government, a loan of 12,000,000 francs; by which means the shareholders will have nothing more to pay beyond the amount of their subscriptions, and for which loan the government are not to receive any interest until the shareholders have been paid four per cent. on their shares. The repayment of the loan is to be guaranteed, nevertheless, by an annual mortgage. The commission having afterwards taken into consideration the railroad from Montpellier to Nismes, adopted the project of the government, which proposes to have the railroad executed at the expense of the state.

ROUEN RAILROAD.—The *Courrier de Rouen* states that the Minister of Public Works has informed the proposed company for the Paris and Rouen railroad, by the valley of the Seine, of his accession to the project, and of his intention to bring in a Bill on the subject as soon as possible.

VARIETIES.

It is in contemplation to erect a statue at Brussels in honor of André Vésale, who, in the 16th century, was the father of anatomy, and produced an important change in the medicinal art. The medical men of Brussels intend to make an appeal to the members of the profession in all parts of the world to assist in the undertaking.

One of the wagons loaded with merchandise, on the railway between Vienna and Brunn, in Moravia, caught fire spontaneously, at the end of last month, and that and the two next wagons were destroyed; the damage is estimated at 75,000 francs. It appears that the wagon contained twelve barrels of lucifer matches, some of which it is supposed ignited by rubbing against each other from the motion of the carriage. The transport of such articles on the railway was prohibited.

M. Poncelet has been almost unanimously chosen President of the Academy of Sciences at Paris for the present year.

The *Journal du Limbourg* publishes a decree of the King of the Netherlands, dated the 17th April, in which it is declared that the Belgian law of the 27th Sept., 1840, respecting the obtaining of academic degrees, will cease to be of any effect in the Dutch division of Limburgh, on the 1st Sept., 1840, and that after that time the laws of Holland respecting academic degrees must be observed.

The Belgian minister of the interior, at a recent sitting of the Chamber, presented a project of law

for authorising the government to favor the establishment of steam-ships between Belgium and the United States.

It is stated, in a letter from Turin of the 29th ult., that M. Bertelli, a rich agricultural proprietor in the neighborhood of Alexandria, in Piedmont, has invented a method by which he makes silk-worms produce blue or red silk at pleasure, so that he can spin silk of either color from the cocoons, the tints of which are naturally not only of the most beautiful kinds, but also indestructible. The invention is at present a secret, but it is supposed to consist in the application of some peculiar preparation to the leaves of the mulberry trees with which the silk-worms are fed.

The *Journal de Charleroi* says, "We learn that many of the proprietors of the coal mines of Charleroi have entered into important arrangements with some houses at Amsterdam and Rotterdam. The successes of the first attempts promise the most happy results, for the excellent quality of the coals of Charleroi cause them to be preferred in Holland to others of the same price; and it is generally known that we can deliver them at a lower price than all our competitors in the trade."

The amount of property destroyed by the fire at Mr. Hanckart's Cloth Factory, at Maestricht, is estimated at 150,000 Dutch florins. The proprietor was not insured; but he was in treaty with some insurance offices at the time the fire occurred. They demanded a higher premium than he was willing to give, which caused the delay in the insurance.

A new process of preserving objects of natural history is said to have been discovered, by means of which, any animal or bird, from the smallest to the largest, may be preserved in a perfectly natural state, without opening them or removing the intestines. The process in preserving a bird is to inject the liquid with a syringe inserted at the beak, and it is said to penetrate every part, even to the extremities of the feathers! The process is attended with very little expense.

Sanatorium.—We noticed at some length, in a former number, the objects of the very laudable institution; which is a self-supporting society for the lodging, nursing, and cure of sick persons, of the middle classes of both sexes. At a public meeting, held a few days since, at Willis's Rooms, Lord Grosvenor in the chair, the aid of the public was earnestly solicited, and we are sure the appeal will not be in vain. An institution like this, when in operation, must tend to mitigate the sufferings, lessen the severity of the diseases, and diminish the mortality of the middle classes; and, as such, possesses strong claims on the benevolent. The Secretary read a list of subscriptions received since the establishment of the institution in March last, amounting altogether to about £800. The capital required to put the institution in operation, was stated to be £3,000. After a vote of thanks to Lord Robert Grosvenor, the meeting broke up.

Fall from Salisbury Craggs.—A few minutes past three o'clock yesterday afternoon, an extensive mass of rock and debris fell from the face of the crags a little to the south of the Cat-nick, at the projecting angle of that part of the rock adjoining the quarry opened some years ago by the Earl of Haddington, for road metal. It is probable that the portion of the rock which fell, may have been partially disengaged by the operations of the quarrymen, and its fall completed by the heavy rain of Tuesday night. It came down with a tremendous noise, which must have been heard to a considerable distance, and sent into the air volumes of dust, which for some time enveloped and clouded a large portion of the hill. A second portion fell within few minutes afterwards, immediately after a lady and gentleman had been observed to pass. Fortunately, they were not injured.—*Caledonian Mercury*.

Historical Society of Science.—A new society, under this denomination, is now in the course of formation, and the first meeting of the council was

held at the rooms of the Astronomical Society, in Somerset House, on Saturday last. It is modelled on the plan so successfully pursued by the Camden Society, the entire subscription, placed at the limited sum of one pound, being expended solely in the printing of the works, to a copy of which each subscriber is entitled. The object of the Historical Society of Science, is to print from the numerous collections at our universities, and other depositories, the most important documents illustrative of the history of the sciences. The scantiness of printed materials on this subject, has been universally admitted, and the society will render a very essential service to scientific men and to the public by the prosecution of their intended labors. Without the aid of such a society, it is scarcely probable that the MSS. thus to be made public, would ever become accessible to the general reader, and we therefore heartily wish the society success.

Effects of the Corn Laws on Foreign Manufacturers.—A short time since, Mr. Heckey, the largest manufacturer of hosiery in Saxony, visited Nottingham, and in the course of his stay had frequent interviews with Mr. J. B. Mather, a very ingenious mechanic, who, after intense study, has succeeded in completing a machine for the manufacture of hosiery, one of which is now at work, and produces upon an average eight pair of pantaloons per day. The object Mr. Heckey had in view, was to obtain a model of this frame, for which he offered £500, but was refused; as alive, it seems, are foreigners to the importance of securing the latest improvements in our machinery. Several interviews took place, and the parties conversed pretty freely upon a variety of topics. Being asked for his opinion upon our corn law, and also as to how far its abolition would affect the production of manufactures abroad, Mr. Heckey answered, "that with the English corn law, foreign countries had not only erected factories, but filled them with machinery; and so long as that law continued in operation, they could work such machinery to advantage; but repeal the corn law, and every foreign manufacturer must look after his capital." The same gentleman also stated, that the discussion in Parliament upon this subject had excited no small degree of alarm in the minds of manufacturers abroad, who watched its issue with as much concern as the people of this country themselves.—*Nottingham Review*.

Iron Ore Mines in Low Furness.—It is truly astonishing, as well as gratifying, to witness the improvement in this branch of business within the last seven years. About twenty years ago, none were employed in the mines in the district but a few old men, say about 30 in all; wages about 12s. per week. It was thought quite a disgrace, and a sure sign of idleness, for a person of 30 years of age to go to the pits, though married and having a family; but now several hundreds are employed, and these of all ages, married and single; indeed, the best of laborers are employed there, and the average wages are 14s. to 15s. a week for about eight or nine hours each day. Many shoemakers have thrown down the last, weavers the shuttle, tailors the goos', and have gone to the pits, as it is termed. Even the farmers are put to some difficulty in consequence, in obtaining laborers. Many more men are wanted, new works are commencing in the neighborhood, steam-engines being erected, and all seems life and spirit. The countenance of every miner seems cheerful, he having plenty of bread, being able to pay rents, dress his garden, &c. A new copper mine has been commenced within these few weeks on High Haume, with every prospect of success. Mining is now become the staple trade of Furness. Should the proposed railway pass through this peninsula to Whitehaven, Scotland, &c., it will become one of the most flourishing districts in Great Britain.—*Lancaster Guardian*.

Large and Small Horses.—Animals draw by their weight, and not by the force of their muscles. The hind feet form the fulcrum of the lever; by which their weight acts against the load, and the power exerted, is always proportioned to the length of the lever, the weight remaining the same. Large horses

therefore, and other animals, draw more than small ones, even though they have less muscular force, and are unable to carry such a heavy burden. The force of the muscles, tends only to make the horse carry continually forward his centre of gravity, or, in other words, the weight of the animal produces the draught, and the play and force of its muscles serve to continue it.

Amongst the numerous ingenious inventions and improvements of the present age, we have not met with one more likely to meet with general approbation than the new patent side-laced boots; they may be unlaced and taken off as easily and as quickly as a pair of shoes, which is not a minor consideration when any one is fatigued with a long walk.

Leipsic Book Fair.—The catalogue of new works issued at the Easter fair of Leipsic, contained 4,459 articles, without reckoning 448 which are announced, but have not yet appeared. Among those published there are 170 novels or romances, 35 theatrical pieces, 83 geographical maps, 486 works on foreign literature, written in eleven European languages. Of these there were 682 published at Leipsic, 952 at Berlin, 232 at Stuttgart, 187 at Vienna, and 150 at Hamburg. The catalogue of the preceding fair contained only 3,607 works.

Glass Weaving.—Few are aware that glass is now woven with silk, although its brittle nature would appear to render such a method of manufacturing it impossible. The fact, however, is indisputable, the new material being substituted for gold and silver thread, than either of which it is more durable, possessing besides the advantage of never tarnishing. What is technically called the warp, that is, the long way of any loom-manufactured article, is composed of silk, which forms the body and ground work, on which the pattern in glass appears as the west or cross work. The requisite flexibility of glass thread for manufacturing purposes, is to be ascribed to its extreme fineness, as not less than 50 or 60 of the original threads (produced by steam engine power) are required to form one thread for the loom. The process is slow, as not more than a yard can be manufactured in 12 hours. The work, however, is extremely beautiful, and comparatively cheap, inasmuch as no similar stuff where bullion is really introduced, can be purchased for anything like the price at which this is sold; added to this, it is, as far as the glass is concerned, imperishable. Some admirable specimens of the manufactured article may be seen at the Polytechnic Institution, Regent-street, especially two patterns of silver on a blue and red ground, and another of gold on crimson. The Jacquard-loom by which it is woven, may also be seen at the same establishment.

The King of Naples has, by a decree of the 6th of April, established the uniformity of weights and measures throughout the whole of the Neapolitan States. The measures of leugh alone are divided into decimal parts.

Gloucester and Hereford Canal.—About five hundred men are now employed in the continuation of the canal from Ledbury to Hereford. Nearly the whole of the first seven miles are in progress: the works at present are confined to this portion, because the supply of water will be obtained by it, not only for the new part, but also for the sixteen miles from Ledbury to Gloucester; it is therefore anticipated that this additional supply will cause a considerable increase of revenue. The most important works at present under hand, are the embankment across the Leadon Valley, at Prior's Court, and the drop cutting at Ashperston. The weather has lately been favorable for the work, and the great progress already made has surprised many persons; part of the line is quite finished, and light brakes, constructed so as to be easily moved from place to place, are now being used on the finished portion, for the purpose of shifting soil and materials. Patent bricks for facing the locks are being made at Ledbury. The bricks are very superior to any before seen in this country. They are moulded in the usual way, and when in a par-

ticular state of dryness, they are forced by a heavy weight into a metal mould, which operation not only brings the brick into a perfectly true and square shape, with a fine smooth surface, but also condenses the clay, thereby making the brick stronger and more durable.—*Hertford Times.*

The young cooper of Rouen, whose musical education has been undertaken by the directors of the Paris opera, signed his engagement on Monday. He is to receive 3,000 francs the first year, 4,000 francs the second, and 10,000 francs the third. This young man, who is twenty-five years old, has a voice of such extraordinary power, that it excites the admiration of all who hear it; but this organ is at present so uncultivated, that it will require the most persevering study to enable him to develop the extent of his natural powers.

The Consumption of Paris.—There were consumed in Paris, in the month of April last, 5,887 oxen, 996 cows, 5,459 calves, 28,560 sheep. In April 1839, the numbers were, 6,766 oxen, 1,484 cows, 6,484 calves, and 35,059 sheep. The consumption of April 1840, compared with that of the corresponding month last year was, therefore, less by 879 oxen, 492 cows, 1,025 calves, and 6,469 sheep. This diminution is immense, and it arose very suddenly, for the consumption during the three first months of the year was increasing in a very satisfactory manner. With the exception of the year of the cholera, there has been no diminution at all equal to it in extent and suddenness; it amounts to the fiftieth part of the average consumption of animal food in Paris. It must be remarked also, that the price of cattle has been increasing in the markets of Sevres and Poissy. It appears from these statements, that the average quantity of animal food consumed in Paris by each individual amounts to only four ounces a day.

The "Society for the Propagation of good Books," at Brussels, lent to read, during the year 1839-40, 18,212 volumes to the working classes.

A great number of forged notes for five Prussian thalers, have been recently uttered in Belgium. Investigations have been instituted at Brussels, and in the principal towns of the kingdom, to discover the offenders.

Sugar.—The manufacture of sugar from the citrul, has been tried with success, by some laudable proprietors in the neighborhood of Presbourg. As the soil of Hungary is favorable to the cultivation of the citrul, this discovery is likely to prove of the greatest importance.

The Retarder.—Trial has now been made of this invention for retarding (not locking) the wheels of carriages when going down hill, with success. The principle of the invention is pressure so applied to the nave of the wheel as to retard its motion, or at the will of the coachman stop it altogether. The advantages of the invention are, that the power may be applied at the discretion of the coachman, so that he might take his coach down a steep hill without allowing his horses to be pressed upon at all.

Woollen-mills have been lately established in Italy, and the clothworkers of Yorkshire, with their families, are emigrating to a considerable number in order to manage the works, and instruct the natives of that country.—*Hull paper.*

Extraordinary Wrought-Iron Shaft.—Perhaps the largest piece of wrought-iron ever seen, and which is intended for a shaft for the two engines of the steam-vessel, the "President," is now in Liverpool. Its weight exceeds ten tons.

Curious Publication.—One of the most curious publications which has appeared in Germany, is the "Embassies to the Sublime Porte, during the 16th century."

A new percussion gun has been tried by Colonel Hotton in the presence of the envoys of Austria, Prussia, Denmark, &c., and has given the greatest satisfaction. The success of all the experiments was complete.

Brussels.—*Construction of Iron Steam Boats.*—The question of steam navigation is more ad-

vanced in Holland than in Belgium. Holland, which possesses no native iron, builds all her steam-boats of that metal, whilst we allow our iron to accumulate for want of employment, and permit our blast furnaces to be extinguished, whilst we buy wood from foreigners to build our steam-boats. A company for navigating by steam-vessels the canals of Belgium, was empowered by a royal ordinance of the 19th of April, 1834, and procured an iron steam-vessel for the purpose. But at that time, the improvement had not been introduced of making the floats of the paddle-wheels enter and come out of the water perpendicularly, by which means the banks of the canals are not injured by the commotion of the water: the project consequently failed. If such an undertaking were now to be commenced, it would not fail to succeed, aided by modern improvements in the construction of the boats and machinery; and we should thus complete, by our canals and rivers, in connection with railroads, the steam communication between all parts of the kingdom.—*Brussels Paper.*

GRATUITOUS COPIES
of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title: and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
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Brazil	Grenada (New)	Spain via Cadiz
Bremen	Greece	St. Domingo
Buenos Ayres	Grenada	St. Kitts
Canada	Halifax	St. Lucia
Caracobs	Hamburgh	St. Vincent's
Carthagena	Heligoland	Tobago
Cephalonia	Honduras	Tortola
Columbia	Ionian Isles	Trinidad
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It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of twopence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 O'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsmen, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 10, are now READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"John Trusson," Manchester.—*The whole patent becomes void, when a patent has been taken out for two inventions, and one fails for want of novelty or any other cause.*

"R. S." Birmingham.—*You ask if the day on which the patent is dated, is reckoned in the time allowed for the enrolment of the specification? We answer,—"Certainly not."*

"R. W. B." Doncaster.—*We should by all means advise the injunction being dissolved, and a strict account kept, until the validity of the patent can be tested by a trial at law.*

"Patente?"—*Under the circumstances you mention, we should certainly advise you not to proceed.*

"W. Salaman."—*A patent is safe from the moment of its being "Sealed."*

"J. Pleyman," Oxford.—*Our Correspondent will perceive that his request has been attended to.*

"R. P."—*Our Correspondent's favor has been received, and shall be made use of,—perhaps in our next.*

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, MAY 23, 1840.

We alluded last week to the growing importance of steam power applied to locomotion, and to the expediency of providing a class of men properly qualified for the important, responsible office of engineer on steamships and on railways. We now return to the subject, with the view of impressing more forcibly the absolute necessity of such a provision, in consequence of the very important part which steam power is destined to take in naval warfare.

There can be little doubt that, when this country is again involved in war with any maritime state, steam navigation will be found to produce a complete change in naval tactics. The effect of this mode of propelling ships in a naval engagement, has been hitherto altogether untried; and the most experienced officers cannot calculate with any certainty on the extent of its operation. It seems, however, to be beyond doubt, that a steam ship of very inferior force would be more than a match for the largest ship of the line of the ordinary construction. A steam frigate, for instance, would always be able to get to the windward of the enemy, and to bring her guns to bear directly on the bows or stern of the sailing ship, and thus completely to rake her, whilst the enemy's ship would not, in a particular position, be able to bring any of her

guns to bear on the steamer. The advantage of maintaining such a position would alone be sufficient to compel the largest sailing ship of the line to strike her colors to the steamer, even supposing the guns of both to be of the same length and calibre; but as steam ships of war would be generally armed with guns of the largest possible size, no sailing ship with ordinary guns would have the least chance against such an antagonist. During the last war, our ships of the line, when becalmed in the Mediterranean, were sometimes exposed to attacks of a similar kind from the enemy's gun-boats. These gun-boats, with a single long gun each, would row out of port with their "sweeps," and keeping, by means of their oars, out of the reach of the guns then used in the navy, they would open a destructive fire on our ships, which they had no means of returning. What these gun-boats were enabled to do with their oars and a single gun, the steam ships, armed with several guns of much larger size, would be enabled to accomplish with much greater effect; nay, we may conceive the possibility of a whole sailing fleet being in this manner captured by a single steam frigate.

In the uncertainty which exists, respecting the extent of the changes which steam navigation must introduce in naval warfare, and in the progress of the improvements which the application of steam power is undergoing, the government of this country acts, in our opinion, with wise discretion, by abstaining from building large ships of war, which altered circumstances might render almost useless by the time they were wanted. The plan of keeping in readiness for action several steam ships of the first class, heavily armed, in case of immediate need, and laying up a quantity of stores, to be in readiness for building others with the improvements which further experience will suggest, seems to us the most advisable course to pursue in the present rapidly progressing state of steam navigation. We cannot, therefore, but condemn the conduct of those members of our legislature who would urge on the government to increase the annual expenditure of the country, by adding to our navy a number of ships, which, after all, might be of little real service. It must not be omitted also from consideration, that this country will shortly have at its disposal a fleet of steam ships of much greater size and power than is possessed by all the foreign powers of Europe combined. The large steamers which are now building for conveying the mails between England and our Trans-

atlantic possessions might, in case of emergency, be readily equipped as ships of war of the first class, and we should thus be enabled, in a short time, to send out a naval force far greater than any other power could command. We perceive, indeed, that the French government is also about to establish a line of Trans-atlantic steamers on the same scale, and calculated to carry artillery, but there can be no doubt that, from our greater mechanical skill and resources, our steam fleet will be afloat long before that of the French, and far more efficiently equipped. In fact, the French are obliged to look to us for that class of powerful and well-constructed engines, necessary for steam navigation; the French tariff modifying its prohibitive character to favor the importation of that kind of machinery,—a resource the French would be deprived of in case of war.

We think it must be evident, on the least consideration of the subject, that the maintenance of the superiority of our naval power must, in a great measure, depend in future on the number and efficiency of our steam-ships. This country has hitherto acquired and maintained its superiority at sea, rather by that unconquerable spirit which animates every Englishman when called into action, than by any peculiar skill in the construction of our ships, or in our naval tactics. In future, much will depend on mechanical skill and ingenuity in the formation and application of machinery to steam navigation; we may, therefore, confidently anticipate, from the acknowledged pre-eminence our countrymen have attained in the construction of machinery, that the effect of the application of steam power in naval warfare will be to give this kingdom even a greater superiority at sea than she has yet attained. The proper management of the machinery, so as to produce the greatest possible effects, commensurate with safety, and a skilful adaptation of means to repair any injuries sustained during action, will, however, be essential to the perfect development of the advantages of steam power; it consequently becomes the imperative duty of the government to raise the profession of acting engineer from the low station to which it is at present degraded, to one worthy the ambition of men to whom the country would like to trust its honor in the hour of danger. It is far from our intention, in these observations, to reflect disparagingly on the individuals at present employed as engineers in the government steam-ships. Many of them, we doubt not, are well qualified for the important

trust they have to discharge, but what we contend for is, that if they be properly qualified for such a responsible duty, they ought to be ranked as officers in her Majesty's service.

INFLUENCE OF THE MOON ON THE WEATHER.

There prevails so strong an opinion among those who are accustomed to observe the state of the weather, and to prognosticate its changes, that the moon exerts great influence on meteorological phenomena—and experience in so many cases confirms this opinion—that the question deserves to be well considered. Among scientific men, great difference has existed on this subject, and the idea of the moon exercising any influence on the weather, or on the human body, is most frequently ridiculed as a vulgar notion, not supported by any assignable physical cause. It must be admitted, indeed, that the ludicrous precision with which some of the almanac-makers pretend to indicate the influence which the moon will exert on the different members of the human body, on every day of the year, tends to throw discredit on lunar influence of any kind; but we must not allow the foolish extravagance of a few individuals to prevent our examining the real merits of an opinion, supported by numerous observations of facts.

The phenomena of the tides clearly show that the attraction of the moon has a powerful effect on bodies on the surface of the earth; and that it is sufficient to counteract, to a certain extent, the power of gravitation. If, therefore, the moon's attraction is powerful enough to raise the waters of the ocean from their level, in opposition to gravity, it may naturally and philosophically be concluded that it must exercise an attracting force equally great on the atmosphere of our globe, and that the effect of such attraction in disturbing the level of the atmosphere will be much greater than in disturbing the level of the sea, as the weight of the air attracted is less than that of water. It is impossible to form any accurate notion of the extent of the disturbance of the level of the atmosphere by the moon's attraction, in consequence of the weight of the air diminishing almost *ad infinitum* as the distance from the earth's surface increases; and we may infer also, that the power of the lunar attraction on our atmosphere would be in some degree increased on the upper strata of air, owing to the increased proximity to the moon. The height of our atmosphere, were it all of the same density,

would be about five miles, but owing to the density diminishing as the height increases, it extends far beyond that distance, and it has been observed to exercise an influence in refracting the rays of light from the heavenly bodies at a distance of 45 miles, which has been, therefore, considered the extent of its limits. At such a distance from the centre of the earth's attraction, the power of gravitation would be diminished, and the influence of the attractive power of the moon would be consequently increased in more than a corresponding degree; but without taking this increased effect on the upper atmosphere into consideration, it will be found that the attraction of the moon on the air, supposing it to be the same as in water, must produce important alterations in its condition.

Supposing the attraction of the moon in the middle of the ocean to be capable of raising the water six feet above the medium level; we may reasonably conclude, that the same attraction would raise a mass of air equal to the weight of six feet of water. Now a pressure of six feet of sea water would be about equal to one fifth of the whole pressure of the atmosphere at that point; and the atmospheric wave, following the course of the moon, would therefore be considerably greater in height than one-fifth of its whole depth, because the attraction would be exerted on the lighter air of the upper regions. The depression of the atmosphere below the ordinary level, in parts remote from the moon's attraction, would also correspond with its elevation; therefore the inequalities would be doubled, and the difference between the extreme height of the atmospheric wave and its lowest depression, would be two-fifths of the whole mass. Supposing, therefore, that tides of the atmosphere exist, even were they of considerable less extent than we have assumed, there can be little doubt that these constant currents in the upper strata of the atmosphere, must exert important influences on meteorological phenomena; and that the changes in these atmospheric tides, occasioned by the now conjoined and now opposing attractions of the sun and moon, are amply adequate to produce changes in the state of the air. In what manner these changes operate, it is not now our business to inquire; our object at present being to show that there are assignable physical causes in operation, sufficient to account for the influence which the moon is commonly supposed to have on the weather.

It may probably be objected, that if atmos-

pheric tides existed they would be indicated by variations in the barometer. This objection, however, will be removed, when it is considered that though the mass of air above the point of the moon's attraction be increased, its pressure on the earth is removed to an equal extent by the attracting power. Some small periodical variations in the barometer have, however, been observed, corresponding in times with the flux and reflux of the tides, but of these we wish not to take any account in support of the theory of lunar influence on the atmosphere, for the cause we have just assigned is sufficient to account for the pressure of the atmosphere not varying with its tides.

NEW INVENTIONS.

BRIDGE BUILDING.

The *Revue d'Architecture et des Travaux Publics* contains an account of a new system of bridge building, invented by an architect of New York, Mr. Town, as exhibited in a bridge constructed over the James River, at Richmond, in Virginia. This system, stated to be "most curious of all inventions which the art of carpentry owes to the Americans, who are in the first rank of its professors," entirely differs from all previous practice in bridge building, is applicable to arches of any span, and peculiarly useful in its adaptation on railroads. Mr. Town uses only planks, so thin as to be readily carried on a man's shoulder. No iron enters into the composition; the planks are united by rivets of wood. These bridges, it is said, will bear any amount or rapidity of traffic, are extremely economical in their construction, and so simple that a village carpenter might superintend their erection.

PICTORIAL CARPETS AND GOBELIN CURTAINS.

Some splendid velvet and tapestry carpets are now on view at the Egyptian Hall, Piccadilly. These exquisite specimens of art have been produced at the Royal manufactory of Aubusson, by Mons. C. Sallandrouze Lamornaix, and exhibit a combination of excellencies in color, design, and fabric, such as, alas! the manufacturers of England are as yet strangers to. Each carpet was wrought in one entire piece, and presents a picture, or rather a profusion of pictures, portrayed with a degree of taste and brilliancy which invite the touch as well as the sight to appreciate the peculiarities of effect—so soft, so delicate in texture, so rich and harmonious in coloring. The composition of the subjects have employed the pencils of Couder, Adam, Meynier, St. Ange, Fontaine, Sarefson, Vandael, and Bouche, and embody some of the most admired designs of the style of Louis XIV. and Louis XV. One elaborate oriental composition, the work of Ben Iffa, deserves especial mention. Another splendid work was (we are assured) designed from an original pattern by the Duchess of Sutherland, enlarged by Langlade. Again, we were pointed out two very beautiful tapestry pannels, on marygold grounds, damasked, after a composition of Earl de Grey—one presenting emblems of peace and agriculture, the other love and war. We were also struck by the magnificent effect of the golden tapestry hangings and curtains fitted up in the *renaissance* style. But, above all, it is truly admirable to behold the fine execution of natural objects—the shells and marbles, the foliage, fruits, and flowers—all brought out with their own vivid tints, and dis-

posed in groups or garlands with a freedom and elegance highly pleasing and picturesque. There are many of the compositions only fit for palaces. We selected (in idea) a couple of exquisite hortensine borders, rich in wreaths and roses, dahlia, wild poppies, and so forth, developing the deep coquelicot tints for which the dyers of the royal manufactory are so famous, and which we should have liked to convert into bedside carpets. The price was only £60! However, there are all qualities and prices to suit all tastes and purses; and for those who attend to fashion as well as fancy there is a "Royal Album" to be seen, containing an immense variety of patterns, amongst which are all the magnificent designs executed for the crowned heads of Europe and their nobility. The tickets to obtain a sight of these treasures, may be procured upon application to M. Feuillet Dumas, 37, Golden-square.—*Post.*

STEAM PLOUGHS.

Among the premiums to be given by the Highland and Agricultural Society of Scotland, at their meeting in the present year, is one of five hundred sovereigns, "for the first successful application of steam power to the cultivation of the soil." In announcing the premium on this interesting subject, it is observed by the society, that "by the cultivation of the soil are to be understood the operations of ploughing and harrowing, or preparing the soil in an equally efficient manner, and the other purposes for which animal power is now used; and the success of the invention will be judged of in relation to its applicability to the above purposes in the ordinary situations of farms in this country, and to the saving in time, labor, and outlay, which it may possess over animal power, as now generally employed in the cultivation of the soil. The merits of the invention, with reference to the conditions enumerated, will be judged of by a committee of the society, especially appointed, and the inventor will be required to exhibit the machinery, and modes of applying it, in Scotland. The secretary, on application of intending competitors, will furnish any information which may be required. The society, in offering this premium, does not feel it to be necessary to express opinions as to the probability of a successful application of steam to tillage, as to the means by which the object may be attained, or as to the effects which might be supposed to result from the application of such a power. But it has felt it to be a duty imposed upon it by its situation, to bring the subject in a proper manner before the country, to encourage those who are now engaged in this class of experiments, and to stimulate future invention, by the offer of a premium corresponding, in some measure, to the interests and importance of the subject. Looking to the greatly extended application which has recently been made of steam as a motive power, and seeing that the difficulties which are opposed to its application to the purposes of the farm have been at least partially overcome by the efforts of individuals, it has appeared to the society, that, without exciting expectations which may not be realised, a strong ground exists for having this possible application of steam power made the subject of fair and satisfactory experiment."—*Mechanics' Magazine.*

NEW PROCESS OF ETCHING.

The following account of an improved method of etching on copper, is given in a Brussels paper, *Le Fanal*. In the ordinary mode of etching with aqua fortis, the plate of copper is covered with a thick varnish, which it is very difficult to spread equally over the surface. It is then smoked with a lamp, and the engraving is done with points, which remove the varnish, and lay bare the copper, which is afterwards attacked by the aqua fortis. But a great deal depends on the thickness or the hardness of the varnish, which drags when it is too soft, and scales off and cracks when it is too hard, and causes great uncertainty and inconvenience.

It is, besides, very dirty work. We propose to substitute gilding for the varnish. A plate of copper, a foot square, would not cost more than a franc to gild, either by galvanism or the common mode of amalgamation. A needle would be sufficient to scratch through this fine coating of gold, for the most delicate touches. As gold resists the action of the acid better than varnish, the engraving thus obtained would be more clear and fine than by the common method of etching.

NEW ENGINE OF EXTRAORDINARY POWER.

A few days since, a great number of persons, among whom were the directors of the different Fire Insurance Companies in the metropolis, assembled in the churchyard of St. Mary Aldermanbury, Watling-street, for the purpose of witnessing the power of a new and stupendous fire-engine (the largest land engine ever constructed) recently added to the force of the London Fire Establishment. It is the invention of Mr. Braidwood, the superintendent of the fire brigade force, and was manufactured by Messrs. Tilly, of the Blackfriars-road. At half-past ten o'clock, it was brought from the Watling-street fire-station, and, a full supply of water having been obtained, it was speedily got into operation. The height of the tower of the church of St. Mary Aldermanbury is 114 feet, and its spires 124 feet. On the engine attaining full play, and being worked by thirty-two men of the brigade, a stream of water of great power was made to ascend nearly perpendicularly on to and considerably above the summit of the church tower, and this was kept up for a considerable time. On a calculation being made, it was found that at the rate described above, the delivery of the water from the branch of the engine amounted to 170 gallons per minute, nearly three-quarters of a ton. This, in comparison, is of equal power with the large floating engine of the brigade moored in the river off Rotherhithe, and above half the power of that stationed at Southwark Bridge, which has three engines on board. The ordinary power of the London engines is to throw 65 gallons per minute, but the one in question possesses equal power to the steam fire-engine constructed by Mr. Braithwaite, which it will be remembered worked at the Argyll Rooms and other great fires at the west end of the town. This engine is not much larger than the ordinary ones, and on comparing its weight with one constructed about 14 years since, of not half its power, it has been found to weigh 14 lbs. less. It has patent metallic valves and pistons, making a stroke of 8 inches with two 8-inch cylinders. It is fixed on a carriage with wheels of an increased size, and patent mail coach axletrees. Its handles are jointed, and made to overlap each other in such a way that, when travelling, its entire length is only 10 feet 9 inches, whereas, when ready to work, they can be extended to 18 feet on either side of the engine, and afford room for 40 men. Another floating engine, of larger dimensions than those already in use, is in course of construction, which is computed to throw nearly two tons of water per minute.

CARSON'S NEW MOTIVE POWER.

(To the Editor of the "Inventors' Advocate.")

SIR,—In No. 40 of your Journal, I observed an article headed "Impossibility of gaining power by centrifugal force." In that article, you have endeavored to overturn the laws which I laid down as the basis of an invention for generating an available power by centrifugal force; a description of which was published in No. 38 of your Journal. In consequence of the good spirit manifested by your former articles towards myself, and the public, I hope I may again crave a short space in your columns, through which to reply to the doctrine taught in that article.

The greater part of that article is employed in endeavoring to show that a double power will not give a double velocity to bodies revolving round a centre; and for this purpose, you use one of my

own diagrams, showing that when the velocity is double, the body falls four times farther below the tangent line; therefore, that a proportional power is necessary to give this double velocity, that is, a quadruple power.

This, I confess, presented itself to me as a new doctrine in mechanics, and I was the more astonished with the article, after the sentiments expressed by yourself in No. 39 of your Journal;—wherein you say, "that as a double velocity can be gained by a double power, whilst the increase of motion thus communicated produces a quadruple force, that by increasing the velocity in arithmetical progression, and gaining power in a geometrical ratio, any amount of force can be generated."

Your having confounded the tangent motion of bodies for centrifugal force, is the cause, in my opinion, of the error you have made in the laws of mechanics. It will require but a little reflection, to perceive that these forces are different and distinct from each other. If a ball, which is fastened to the periphery of a wheel, is disengaged when the wheel is moving with any given velocity, the ball will proceed in the tangent line with precisely the same velocity with which it was formerly moving on the wheel; if the motion of the wheel be doubled, and the ball be disengaged, it will pass in the tangent line with a double motion only; but the centrifugal force of the ball, acting on the fastenings before disengaged, was quadruple. This is sufficient to show the difference between tangent motion and centrifugal force.

That a double power produces a double velocity in bodies moving in curved lines, as well as in straight lines, is a so generally-received law of mechanics, that I did not think it necessary to dwell on this point in my first article in your paper. As this appears to be the principal objection which you now advance against the working of my engine, I will quote from "Maclaurin's Newton" an experiment made by the ingenious and accurate Mr. Graham, to whom the mechanical sciences are so much indebted. "He prepared a pendulous body, with a cavity in it capable to receive another body of an equal weight, at the lowest point of its vibration; and when the body was dropped into it, he found, by the subsequent vibration, that the velocity of the double mass was precisely one half of what the velocity of the pendulum was before." Now, from this experiment, it is evident that the same force produces in a double quantity of matter, one half the velocity only; and by a correct scale of reasoning from this experiment, the same power produces in the same quantity of matter, the same velocity; a double power produces in the same quantity of matter, a double velocity, &c.; and this in a curved line when there is no resisting medium. I am happy to be able to add to this experiment another, performed in my presence but a few hours ago, which is more directly to the point. This experiment was made by a small apparatus, something similar to the whirling table, constructed by a very ingenious jack-maker, Mr. Porter, of No. 16, Holywell-street, Strand; the result of which was directly contrary to the article in No. 40 of your Journal, on "Centrifugal Force." It was found by the action of this apparatus, revolving under a great disadvantage, having no case to prevent the throwing off of the atmosphere, that a double power produced, within a fraction, a double velocity. We tried the experiment a number of times with bodies placed on the table, and again with these bodies removed. Mr. Porter is of opinion, that when provided with an air-tight case, the velocity of the apparatus, when a double power is applied, will be precisely double. As farther arrangements are about to be made with this apparatus, for proving various points bearing on my invention, I have no doubt the constructor will feel a pleasure in performing experiments for such parties as may feel an interest in knowing the truth of a very important law of mechanics.

These experiments are worth volumes, in confirming the generally-received law on the motion of bodies in curved lines, and agree with Sir Isaac Newton's philosophical discoveries and system of

the universe: this beautiful writer shows, that notwithstanding there is a constant increase and decrease of centrifugal force occurring in the approach and recess of the planets to and from the sun in every revolution, this centrifugal force, acting in a direct line from the centre of motion, has no effect whatever in retarding or accelerating the motion of the body round its centre.

Perhaps this is enough on centrifugal force; establishing as it does the laws of my engine on a firm foundation, and harmonising beautifully with one of the most sublime of known philosophies; and I hope, after farther reflection, and correct observations by experiments, you will be able to agree with me as to the truth of these laws.

There is only one other point which you have advanced against the working of my engine—that is, re-action; this I answered in my last letter, showing that no re-action can occur by the discharge of fluid bodies from the hollow arms. I will only now add—if any re-action existed, it could be employed in favor of motion, by bending the mouth of the tube in a direction opposite to the motion of the engine, which, instead of operating against, would assist the motion of the generating engine.

Desirous of acknowledging my sincere thanks for your kind sympathy, and the praiseworthy spirit manifested to the public through your Journal, I subscribe myself, Sir,

Your obliged Servant and Well-wisher,
S. CARSON.

Wednesday, May 20, 1840.

(To the Editor of the "Inventors' Advocate.")

SIR,—Allow me the use of your inestimable Journal to make a few further remarks upon the doctrine of central force, as it has lately been expounded very incorrectly, both by Mr. Carson and his opponents.

The first grievous error of which Mr. Carson's opponents have been guilty, is that of stating that there is a loss of power in moving bodies in circles; instance, fly-wheels, even as 14: 11. I uphold, on the contrary, that there is no loss of this kind at all, that although the body has a tendency to assume a straight path, and to separate itself from the centre of motion, yet so long as no motion ensues in that direction, no power is lost, except what may be caused by friction on the axis, and this is = to nothing when the wheel is in equilibrium, or the centrifugal force all round the same. Rolling a body on a railway is an example of this, for although the body has a constant tendency downwards by gravity, yet so long as motion in that direction is prevented by the rails, no loss of power ensues, except the slight friction of the surface.

The next error which ought to be pointed out, is a statement that centrifugal force does not act in the line of the radius. Now, both the centrifugal and centripetal forces act exactly in a line with the radius, and the reason why bodies as they leave the system, with which they might have been for a time connected, move in a tangential direction, is, because the centrifugal force in the direction of the radius is compounded with the progressive motion in the direction of the tangent, thus producing a compound motion. Suppose that this were, either water flying from the circumference of a fly-wheel, or balls out of a centrifugal pump; the particles in both cases will be found to have only advanced as much in the tangent as they would have advanced in the curve at the end of any given instant of time; thus proving what is better done by Mr. Carson's machine, that the centrifugal force is only that force which acts in the direction of the radius.

I next come to that part of the subject where it is stated that a double power is unable to produce a double velocity, as directly opposing Mr. Carson's theory; and my only fault with this is, that it does not at once boldly state that it takes quadruple the power to produce double the velocity; which, on the other hand is, by the centrifugal force, capable of giving out the quadruple power again; thus

showing the equilibrium of nature, and proving at the same time, that if Mr. Carson's machinery were devoid of friction, it would just work itself on by a perpetual motion, which every machine would do, could friction and resistance of the air be entirely done away. Now, to illustrate this it is only necessary to remind your readers, that the power necessary to urge a fly-wheel from a state of rest up to a velocity of, say 32 feet per sec., is equal to the power represented by the weight of the wheel moving through the space of 16 feet, and that the power necessary to urge the same fly-wheel to a velocity of 64 feet per sec., is equal to the same weight passing through a space of 64 ft., the velocity attained being double and the power fourfold. Now this is only true so long as the body is uniformly accelerated by the power; after a given velocity has once been attained, and no fresh matter in a state of rest is added to the wheel, there is nothing requisite to keep up the velocity, but to overcome the friction of the machine, and this being double for double the velocity, consequently double the power would accomplish it. But what constitutes the fallacy in Mr. Carson's reasoning is, that he has perpetually new matter, say either water or balls, to urge from rest into motion,—consequently, always requiring the exertion of his quadruple power.

The example of the humming-top illustrates this, because it has to urge the water from a state of rest into motion before it will leave the wheel; that requiring a continued exercise of a quadruple power, soon brings the machine to rest.

Mr. Carson would sooner accomplish his purpose by a centrifugal pump than by his machine; there could not by a possibility have been a worse method of transferring power by water than the one chosen by him. The less the direction of the motion of water is changed, the less effect will be lost; and of all machines for conveying water, power cylinders and pistons are the worst. A centrifugal pump, if it do not reverse the motion of the water, or throw it to a more unnecessary distance than another pump, will be equally good with that pump, and a hundred times better than cylinders and pistons. Mr. Carson must give up his crotchet, comforting himself that if his theory of the multiplication of power had proved correct, creation would long ago have again become chaos, and these immense systems which so harmoniously revolve around us, would soon, after their first creation, have been along with our forefathers plunged to the eternal extremities of space without even a comet's hope of ever being returned even at the end of time.

Your's respectfully, R. P.

[We have inserted the preceding letters, with a view to promote discussion on the important principle in mechanical science to which they refer. We shall probably, on a future occasion, combat the objections advanced against the opinions we expressed in our former articles on this subject.—Ed.]

LITERATURE.

REVIEW OF BOOKS.

Report of Steam Communication with India, via the Red Sea. By W. D. Holmes, Civil Engineer. 1838. John Weale.

On the Construction of the Ark, as adapted to the Naval Architecture of the present day; On the Equipment of Vessels, and on Steam Navigation to India. By W. Radford, R. N. 1840. John Weale.

One of the duties we have imposed upon ourselves, as 'Advocates' of the interests of the public, is to expose those who dishonestly appropriate to themselves the merits and

talents of other men. This, we regret to say, is a very common practice; indeed it appears as if the labors of scientific men were deemed public spoil, over which every pretender is allowed to assume a right: thereby very many deserving individuals have been defrauded of their just reward, while some unprincipled impostor has reaped the benefit of their abilities.

These remarks are wrung from us by the perusal of a pamphlet recently published, in 1840, by a Mr. Wm. Radford, R. N., who modestly assumes to himself the merits of having discovered the superiority of large iron ships over wooden ones, of the ordinary kind, and the preference of large over small vessels, especially for steam communication with India. Now it so happens, that both these valuable discoveries were made and given to the public by Mr. W. D. Holmes, Civil Engineer, before the experiments made by the Great Western and British Queen (by which have been tested the correctness of Mr. Holmes's conclusion); and as far back as 1838 were fully detailed in his *published report* to the committee on Steam Navigation to the East Indies, over which Sir Wilmot Horton and Mr. T. A. Curtis presided.

With the above facts before us, what are we to think of Mr. Radford, who comes forward and boldly claims these discoveries as *his own*; doubtless in the belief that Mr. Holmes's communications had by this time been forgotten? This conduct in a **NAVAL OFFICER** is, to say the least of it, most discreditable and unjustifiable. In many instances, Mr. Radford has actually adopted not only Mr. Holmes's discoveries, but also *whole sentences and paragraphs*, in the identical phraseology in which they appear in the report from Mr. Holmes to the committee! We cannot but admire the tact of the "Naval Officer," for, to induce a belief that he is master of his subject, he commences with an extraordinary Theological Essay upon Noah's Ark, wishing it, no doubt, to be supposed that he has arrived at the two points of discovery; namely, the size of vessels, and the substitution of iron for wood, from a consideration of the merits of Noah's Ark! To his ultra disquisitions respecting Noah, his ark, and his family, Mr. Radford, we dare say—so far as Mr. Holmes is concerned—is perfectly welcome. No doubt these *are* his own; but we severely censure him for arrogating to himself talents he does not appear to possess, and merits which evidently belong to another. Such undue assumption must invariably lead to the most deserved disgrace.

We are in possession of the two volumes mentioned at the head of this notice; and we have carefully marked the passages in *both*, to which we have had occasion to allude.

THE NEW ROYAL EXCHANGE.

The Gresham committee, on Thursday evening last, determined in favor of the design submitted for the Royal Exchange by Mr. William Tite, F.R.S.; the majority of votes having been 13 to 7, that gentleman was, in consequence, appointed architect.

The design thus adopted, possesses features of a very striking character, and is much approved of in the city. It will be recollect, that the site of the intended building is of an irregular form. The ground westward of this site, is to be cleared by the removal of the two masses of building which now stand in front of the Bank, so as to leave an unin-

terrupted area from the intersection of the streets in front of the Mansion-house: in this area, it is intended to place the statue of the Duke of Wellington. From the nature of the ground, any form of building which should adequately occupy it, must be much wider at the east end than at the west. This irregularity is concealed, and, though not rectangular, the proposed structure is perfectly regular in the plan.

At the west end, the architect has placed a very striking portico of eight columns of the Corinthian order. The width of this portico is 90 feet, and its height to the apex of the pediment 75 feet; this is 16 feet wider and 17 feet higher than the portico of the church of St. Martin-in-the-Fields. Behind the portico is the central entrance to the Exchange, which is deeply recessed within a large arched opening, having on each side an arch of corresponding general character. When clear of the portico, the building is increased in width by pilasters and recesses, making its greatest extent, at the west end, 106 feet.

The south front, or that towards Cornhill, is an unbroken line of 250 feet, occupied by a range of Corinthian pilasters, the intervals between which are divided in height into two stories. The lower of these consists of a series of rusticated arches, which comprises the shops, and the entrances both to the Exchange and the offices; the upper story includes a uniform line of decorated windows for the principal floor.

The north front is generally similar to the south.

The east front is terminated at its northern and southern extremities by curved corners, each containing three rusticated arches, with windows above; and from the centre of this front, rises a tower 160 feet in height, terminated by a vane, formed of the ancient grasshopper, the crest of Sir T. Gresham.

The total length of the building, including the projection of the portico, is 293 feet, and its extreme width, at the east end, is 175 feet.

The area for the merchants, is nearly in the centre of the edifice. It is a parallelogram, 170 feet in length from east to west, by 112 feet from north to south, and is entered in the centre of each of the four sides. There is a colonnade of the Doric order round this area, which leaves about one-third of the whole space open. Over the colonnade, is a second order of attached Ionic columns, with arched and highly decorated windows in each intercolumniation.

With reference to the arrangements of the plan, it appears that the ground-floor is principally appropriated to shops and offices, except a part of the north-east corner, which is given to Lloyd's, and the south-west, which is reserved for the Royal Exchange Assurance-office. On the one pair, or principal floor, the Subscribers'-room, Commercial-room, Reading-room, and other apartments of Lloyd's, occupy the whole of the eastern portion of the building, and about two-thirds of the northern. The Gresham Lecture-rooms, library, and other apartments, fill up the rest of the north front, and part of the west. The south front, in nearly all its length, is given to the corporation of the London Assurance, which establishment is to be accommodated in the new building; and the remainder of the south and west is appropriated to the Royal Exchange Assurance.

BURNING OF YORK MINSTER.

(Extract of a Letter, dated May 21.)

You may hear the rumor of the alarming and truly awful calamity that has occurred in this city, before you receive this. I have witnessed it, and shall hold the recollection as long as my memory exists. About 20 minutes to 9 o'clock last evening, I was told the Minster was on fire. I ran out immediately towards it, and stood by it just as the flames had issued from the top part of the southwest tower, at a height that an engine could not have played upon. The fire continued to rage, until it

had entire possession of the upper part, flames issuing from every window, and piercing the roof. To describe the feeling under which I witnessed the devouring element preying upon a national monument, which every man must look upon with admiration, requires a pen more descriptive than mine. Grief, awe, wonder, and admiration, were the emotions with which I regarded the destruction of this venerable church. I soon obtained admission to the nave of the cathedral, and observed the first falling down of the burnt embers. The flames illuminated the interior with more than midday brightness; the light pouring through the crevices, threw a brilliancy over the scene which imagination cannot paint. The fire at this time was wholly confined to the tower. After a space of half an hour, the flooring of the belfry in the tower began to be forced by the falling bells and lighted beams. At this period, my nerves were strung to the highest excitement. The noise was extraordinary. The shouting of the firemen, the roaring of the flames rushing up the tower with the rapidity of a furnace draught, sounded in the high and arched space, awful and terrific. The falling masses of wood and bells sounded like the near discharge of artillery, and were echoed back from the dark passages, whose gloomy shades and hollow responses seemed mourning at the funeral pile that burnt so fiercely. In one hour, the tower was completely gutted, and masses of burning timber lay piled against the south-west door. The upper and under roof, composed principally of fir timber, covering the nave as far as the centre tower, had by this time become fired, and burned with extraordinary rapidity. The firemen, by a well-managed direction of the water, prevented the flames passing through the west windows of the centre tower, and continued their exertions at that spot until the whole of the roof had fallen in, and lay in the centre of the long aisle—a sea of fire.

The west doors had now become nearly burnt through, and planks were brought to barricade them, and prevent the rushing of air to fan the embers to flames, which might have communicated to the organ, and thence throughout the whole pile of buildings.

At one o'clock this morning, I again entered the cathedral, and then concluded there was no danger of further destruction. The tower is standing, also the walls and pillars of the nave, and beyond that the building, I am happy to state, is saved.

The fire is supposed to have originated from a clockmaker, who has been for some time past occupied in repairing the clock in that tower, who might accidentally have dropped a spark from a candle.

It is a remarkable fact, that one of the largest meetings known in York took place in the evening; I believe the "Protestant Operatives"—who met at a "tea-drinking," and, in the midst of their festivity, the burning of the Minster was announced.—From *The Times* of yesterday.

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING MAY 25TH, 1840.

Monday.	Linnæan Society (anniv.).....	1 P. M.
	R. Geographical Society(anniv.).....	1 P. M.
	Medical Society.....	8 P. M.
Tuesday.	Medico Chirurgical Society.....	8½ P. M.
	Instit. of Civil Engineers.....	8 P. M.
	Zoological Society.....	8½ P. M.
Wednesday.	Society of Arts.....	7½ P. M.
	Geological Society.....	8½ P. M.
	Medico-Botanical Society.....	8 P. M.
Thursday.	Royal Society.....	8½ P. M.
	Royal Society of Antiquaries..	8 P. M.
	Royal Society of Literature....	4 P. M.
	Numismatic Society.....	8 P. M.
Friday.	Royal Institution.....	8½ P. M.
	Linnæan Society (President's soirée).....	9 P. M.
Saturday.	Mathematical Society.....	8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL INSTITUTION.

May 8th. Friday Evening Meeting.

Mr. Faraday delivered a lecture "On the Force of the Power in the Voltaic Pile"—being a general survey of the arguments detailed in his series of papers read before the Royal Society. The lecturer, with his usual tact, hastily passed over the various original experiments of Davy, Volta, &c., as introductory on some future occasion (owing to the want of time) to the continuation of this interesting subject.

At the conclusion of the lecture, Mr. Smees new battery was shown in action.

In the library, the following articles were exhibited:—A spring carriage window, from Messrs. Cooke and Rowley; Moorish pottery (modern), from Mr. Diamond; a new candle lamp, from Mr. Crochford; model of a Welsh coracle, from the United Service Museum; Brown's patent hydraulic level, from Mr. Hemming; specimens of coins and electrotypes, from Mr. Palmer.

It was announced, that on Friday, May 15th, Mr. Macilwain would deliver a lecture "On Respiration, and its Relation to Animal Temperature."

BOTANICAL SOCIETY OF LONDON.

May 1st. Daniel Cooper, Esq., Curator, in the Chair.

A paper was read, communicated by the Curator, from Mrs. Riley of Papplewick, Notts, being Part 2, of a "Monograph on the Ferns."—"On the arrangement and classification of the British ferns, and the best assistances for their study." The object of the communication was, to show how they who have paid attention to the subject for years, have already classed and arranged them; to point out which of those arrangements, observation induces the author to think most correct; and by comparing one with another to show where differences exist. The ferns are in themselves such a distinct *Natural Order* that we shall not err, if we seek in them farther marks, to enable us to divide them into sections, genera and families. The first natural subdivision of the British ferns is that of, 1. *Annulatae* having their fructification at the back of the frond or leaf, and their capsules provided with a jointed elastic ring, which springing open when ripe, disperses the sporules. 2. *Exannulatae*, those which bear their fructification on a simple or branched spike, their capsules being destitute of the elastic ring. The first section consists of two families, *Polypodiæ* and *Hymenophylleæ*—the second, of *Osmundæ* and *Ophioglossæ*. From these, to form other divisions, the earlier systematic botanists, as Ray, Tournefort, and Plumier, resorted in the first instance to the shape of the frond; but this in many of the species is so similar, that it is useless alone, as a genuine distinction. *Liunæus* depended upon the shape of the *sori* (or masses of capsules), whether round, oblong, linear, &c., and this forms a much better distinction, but is still insufficient. Sir J. E. Smith first suggested an additional principle of arrangement, arising from the form, and insertion of the involucrum (or indusium), a membrane which in many of the ferns covers the *sori*, and forms a protection to the capsules; and especially from the manner in which this cover bursts, when the capsules become ripe. This is found to afford very precise distinctions;—to establish the most natural genera;—and greatly to facilitate the investigation of species:—and thus the numerous family formerly included in the genus *Polypodium*, has been subdivided into *Aspidium*, *Nephrodium*, *Cystea*, &c.

The form and insertion of the involucrum, added to the shape of the *sori*, was followed in the different arrangements of Swartz, Wildenow, and Sprengel: Brown and Presl have added another distinctive mark, that of the *venation*; not that the way in which the *veining* of the leaves (or fronds)

runs, will of itself determine the species, previous to the fructification appearing, nor that the laborious investigations of Presl will supersede the principle suggested by our own countryman; but in conjunction with the forms of the membrane, and sorus, the disposition of the veins will prove of great service, in the accurate discrimination of the species. By the aid of the *involutum*, Smith divided the English ferns of the section *Annulatae* into 11 genera, comprising 40 species. The *Exannulatae* are subdivided into three genera, each containing but a single species. Hooker has increased the genera of the former section into 13, by dividing *Grammitis* from *Scolopendrium*, and *Cryptogramma* from *Pteris*: he has diminished the species in this section to 38—the *Exannulatae* remain the same in both. A tabular arrangement of the genera of the British ferns, with an analysis of Smith's arrangement with Hooker's additions, followed; there was likewise subjoined a tabular list of the names of the species, arranged according to Smith's English Flora, with their synonyms, as given by Hooker and Presl.

The Chairman read the Addresses of Congratulation to Her Majesty and Prince Albert, on the occasion of the royal marriage, about to be presented.

SOCIETY OF ARTS.

May 20. Dr. Roget, F. R. S., Vice-President, in the chair.

Mr. Graham, Secretary, read a report from the committee of colonies and trade, recommending that a large gold medal be presented to Mr. C. A. Bruce for having discovered the indigenous tea plant in Upper Assam, and established its cultivation in that country. It was decided unanimously, that the medal should be awarded. A report from the committee of chemistry was next read, on Mr. L. Thompson's new method of assaying gold, of which the principle is the separation of the gold from the silver (the former in its pure state, and the latter in the form of a chloride), and the consequent volatilization of the other metals entering into the alloy. Experiments had recently been made in Guy's Hospital by Mr. Aikin, and other chemists, with an alloy composed of three grains of gold, and thrice that of silver and of zinc, which after being triturated with common salt and exposed to heat in a crucible, was acted upon by chlorine gas, and the result was, that both the gold and the silver were obtained pure, and without any loss in weight. Alloys of gold with manganese and brass had been thus treated equally successfully. It was resolved that 20 guineas should be awarded to Mr. Thompson for this invention. The silver Isis medal was then voted to Dr. E. Callaghan, of the dragoon guards, for an improved apparatus for elevating and sustaining injured limbs; after which, a letter was read from his Royal Highness the Duke of Sussex, president, announcing his intention of attending at the forthcoming distribution of the prizes.

METEOROLOGICAL SOCIETY.

May 12. Dr. Lee, F. R. S., Treasurer, in the chair.

After reading the minutes of the preceding meeting, Lieut. Morrison, R. N., read the report of the committee appointed to examine and arrange for publication the documents in possession of the society, of which the following is a brief abstract:—

The documents, which have been accumulating for several years, are divided into two classes. The first class the committee denominated *Tabular Records*; and the second, *Miscellaneous Papers*. The extent of the first class reaches as far back as the year 1770, and comprises observations on pressure, temperature, fall of rain, winds, clouds, and evaporation, and various other phenomena from upwards

of 60 several stations, embracing the whole of Europe, the United States, the Southern Coast of Africa, India, Australia, and various Islands in the Atlantic. The observers to whom the society is indebted for so much valuable meteorological data, are chiefly members and associates, who rank among the most eminent philosophers of the age.

The second class, or miscellaneous papers, comprises communications of various writers, on every branch of atmospheric phenomena, and also several essays on physical subjects connected therewith. Among these, the following were pointed out as deserving particular attention, viz.:—Numerous papers on *Aurora Borealis*, Falling Stars, Atmospheric Refraction, and the Theory of Rain.

A most interesting communication was then read from Professor Waitmann, of Geneva, on that beautiful, yet difficult physical phenomenon, Falling Stars, or, as they have been more properly designated, *Meteoric Showers*. This paper referred to the display which took place on the 10th and 11th of August, 1839, when six observers were so placed as to command the entire circumference of the heavens. The number of meteors noted, amounted to 672, which did not radiate from any particular constellation, but from various parts of the heavens, and darted off in various directions: their magnitudes were varied, from the size of the planets to stars of the fourth and fifth magnitude; some were cundate, and others not so, and a few of them had an ascending direction.

This paper was accompanied by an elegantly engraved celestial planisphere, showing the point of radiation, line of direction, and place of extinction of every meteor.

MEDICO-BOTANICAL SOCIETY.

May 13th. W. T. Iliff, Esq., in the chair.

The chairman announced that in accordance with the resolution of the council, congratulations to Her Majesty and His Royal Highness Prince Albert, on the royal nuptials, had been presented, each of which were read to the meeting, together with the reply from Prince Albert's secretary.

A paper was read from Dr. Hancock on "the Remedial and antiseptic properties of carbonic acid, more especially in connection with its use as a bath in the treatment of cholera." As to its antiseptic properties, Dr. H. alluded to its having been used to preserve meat, and proved as an efficient, cheap, and salutary method of preserving both fish, flesh, and fowl. The author stated as the result of experiments (not of theory), that in one of the sugar estates in Essequibo he had suspended meat over the fermenting juice of the sugar cane with the best results; he found that by allowing it to dry in that situation, the flesh resisted all appearances of decomposition for a great length of time.

With regard to its remedial properties, more especially in cholera, during the stage of collapse, Dr. H. considers carbonic acid, administered in the form of a bath (keeping the head out), merits attention: not only has he made trial of it in this formidable disease, but likewise in consumption, bronchial affections, rheumatism, &c.

Its action, when applied externally in the form of a bath, is that of promoting the circulation in the skin, which is evident from the heat and pricking sensation it produces, and the profuse perspiration which follows its application. Dr. H. is of opinion that carbonic acid, to a certain extent, is a preventive to cholera, plagues, and malignant fevers generally; in proof of which, he remarked that those individuals employed in the manufactures where this gas is generated in quantity, such as the breweries of London and Glasgow, and the pits of Kilkenny, have been observed to be less subject to the prevailing disease, in comparison with those engaged in other works. The author is inclined to attribute the origin of cholera to the exhalation of carburetted and sulphuretted hydrogen gases from the earth, and in proof of this, instanced the effects of these gases on the constitution of the inhabitants of Cairo, and

those on the shores of British Guiana, where these gases abound; the gases, when respired, producing symptoms exactly analogous to cholera and yellow fever.

With respect to the antiseptic properties of carbonic acid, the author considers there is a very material difference existing between that which is the product of mineral, and that produced from vegetables or fermentation. The former, he states, rather accelerates the putrefactive process; while that which is produced by fermented vegetables is of the greatest importance as an antiseptic. He cannot account for this singular fact; such, however, is the result of experiment.

A discussion ensued, in which several members took part. The Society then adjourned until the 27th inst.

NOTICE.—The Botanical, Meteorological, and Uranian Societies have removed from their temporary rooms to No. 20, Bedford Street, Covent Garden.

THE THEATRES.

"See that the players be well used."—*Hamlet*.

"Nothing extenuate, nor aught set down in malice."—*Othello*.

HER MAJESTY'S THEATRE.—*The Maid of Palais*, performed on Tuesday, drew a highly fashionable assemblage. It was an "interesting" occasion; both GRISI and RUBINI being restored to the stage, after being removed from it by a similar melancholy cause—the death of a near relative. To the reappearance of RUBINI we were indebted for the pleasure of hearing once more the beautiful duet in the prison, "Forse un di conoscerete." Another improvement in the scenic effect, was the first performance of Ernesta GRISI in the part of *Pippo*; but we still had to lament the suppression of that most touching *morceau*, "Deh pensa che domani," which, next to the celebrated trio "O nome benefico," is perhaps the brightest gem of the opera—at least in so far as pathos is concerned. The cause of this omission, under such improved circumstances, we are at a loss to explain. When we last saw TAMBURINI in the part of *Fernando*, we had rather present to our mind his habitual efficiency in the part than his pre-eminence at the moment; but, on this occasion, he left nothing for the most fastidious hypercriticism to desire. Of the other parts we have before so highly spoken, that we need not now dwell upon them. On the ballet and the lovely Mdlle. CERITO, we have also exhausted our criticism and praise. A topic which engrossed the conversation of the *habitués* in the pit, was the departure for Paris of the amiable and talented composer M. MARLIANI, who has lately had confided to him the direction of the Italian Opera in Paris. This gentleman, on the termination of the late Paris season, engaged GRISI and PERSIANI, RUBINI, LABLACHE, and TAMBURINI, for the whole of the ensuing theatrical year, which extends over the next London season. He thus possesses that galaxy of talent without which no Italian opera can secure public patronage. M. MARLIANI is understood to have come to London, to ascertain into whose hands her Majesty's theatre will devolve next season. We have every reason to believe that he leaves London without having entered into any contract with the future manager of her Majesty's Theatre, whoever he may be. The assignees of the Opera are reported to demand £16,000 for the rent of each ensuing year, unless the property be bought 'out and out.' For this purchase, £100,000 it is likewise rumored, are required. The sum would be far from exorbitant, if this property were not the habitual delight, not only of the *dilettanti*, but still more of the gentlemen of the long robe, on account of its incumbrances. From what we have just stated, (we by no means vouch for the correctness of the rumors) a singular result might follow. One party

having engaged the singers, and not possessing the lease of the Opera, might have recourse to another theatre, which, like that recently built in Oxford-street, does not require the Lord Chamberlain's license. On the other hand, the assignees of her Majesty's Theatre, or their lessee, would have to fight the battle with an inferior company, whose only redeeming point would probably be a superior *corps de ballet*. We must again say, that this is only one of the singular *on dits* that have reached us from her Majesty's Theatre, and we leave such of our readers as feel an interest in these matters to seek for a confirmation of them. Her MAJESTY and Prince ALBERT entered the theatre, just as GRISI and TAMBURINI were executing the duet "Per questo amplessò."

COVENT GARDEN.—"Benefits," and "benefits" only, have taken place here since our last; the lessees not choosing to lose any more money. The house will finally close on Friday next,—that evening being devoted to the benefit of Mr. Charles MATHEWS. We cannot but regret, that Madame VERTES' speculation should have proved so unprofitable. There are various rumors afloat, respecting her having, and not having the theatre another season. One thing is certain; she bitterly repents having given up the Olympic. There she was an excellent manager,—alone, and unapproachable. When, however, she ventured into deeper water, she lost her foot hold, as her best friends told her she would do. In the vacation, she will have leisure to "chew the cud."

DRURY-LANE.—A meeting of the directors of the contemplated concerts *à la Jullien*, was held on Thursday, at which it was resolved to open the house with the projected musical entertainments, on Thursday, the 4th of June. No expense is to be spared to render the house an agreeable promenade in hot weather. Several fountains are to throw their sparkling waters among the gas-lights, and growing shrubs and flowers are also to be introduced. The band is to consist of 100 performers, and 26 vocalists have been also engaged.

HAYMARKET.—At last, the long standing bill of fare—which it has not hitherto been deemed necessary to alter—is withdrawn. *Hamlet*, *Richelieu*, and the *Lady of Lyons*, are placed upon the shelf; and a new tragedy, called *Glencoe, or the Fate of the Macdonalds*, is to be produced this evening. The name of the author has not transpired. Mr. WEBSTER assures us it is not by Sir E. L. BULWER, as reported. Among other promised novelties, is an engagement with Mr. Charles KEAN, to commence on Monday week. All who are anxious to see "foul murder" committed on the characters of our Immortal Bard, will "rush to the poll, early." We observe, with feelings of real pleasure, that Mr. K.'s engagement is a "limited" one. Till he has left the theatre, we will answer for it that no "old play-goer," in the true acceptation of the term, will enter the walls—unless indeed it be to make sport.

Little BUCKERONE, previous to visiting America, has entered into a short engagement here. We trust he will not be over anxious to return, as we can very well dispense with his services,—for some years at least. His humor is so "precisely peculiar," that it is always the same; and we find it very difficult to force a laugh, with a view to be "in the fashion."

SURREY.—The "Governor," in addition to the usual performances, on Tuesday night presented for the first time to the notice of a very crowded audience, a pleasant trifle, in one act, entitled *Everybody's Relation*, which was received most approvingly. The piece is an adaptation from the French. The plot is of the slightest texture, and the incidents are by no means novel or original; nevertheless, the dramatist with but very scanty materials has succeeded in producing some comic and ludicrous situations, which drew largely on the risible faculties of the audience. The piece was well sustained by the *corps comique*.

ASTLEY'S.—Crowds of anxious visitors besieged the doors of this establishment, on Monday; Her

Majesty having signified her intention to be present, at three o'clock, to witness the grand rehearsal of the *Wars of Wellington*. To the disappointment of many thousands, Her Majesty did not "keep her appointment." Her visit was deferred till Wednesday. This new Military *Spectacle* is every way worthy of the united talents of Messrs. DUCROW and WEST, whose energies, it was quite evident, had been devoted to the subject for some considerable time previous. The piece opens with the Capture of Seringapatam, during which, Sir John Moore is slain; then follows the Storming of Badajoz, and finally the glorious Victory on the plains of Waterloo. The "Scenes in the Circle" have again been varied, and a new after-piece produced, which gave perfect satisfaction to a very full house.

That most amiable lady and accomplished actress, Mrs. Yates, is said to be still laboring under severe indisposition.

THE NEW PLAY announced at the Haymarket, under the title of *Glencoe*, was currently attributed to Sir Edward Lytton Bulwer, but the honorable Baronet declines the compliment. It turns upon the notorious "massacre" of the Macdonalds, a Highland clan who adhered to the Stuart dynasty during the reign of King William.

THE MUSARD CONCERTS.—We are requested by M. Laurent, the director of the Promenade Concerts at the English Opera-house, to correct a misrepresentation which has gone abroad, that the performers, forming part of the band of these Concerts, could not attend to their engagements, and to state that there is a band of sixty performers regularly engaged at the English Opera-house, including Signor Negri, Messrs. G. Cooke, Richardson, Lazarus, Laurent, jun., M'Farlane, Bean, Keating, Albrecht, Edgar, Pigott, &c., and the celebrated Monsr. Collinet from Paris; in addition to whom, Messrs. Harper, Platt, Hatton, and Baumann are engaged as solo players, and will appear successively before the public.

ANOTHER GREAT PIANISTE.—1840 will be a remarkable season in musical record in London, for the reunion of some of the greatest pianistes in the world. We may now not only boast of possessing "*Le Roi des Pianistes*," as Listz has been called, but also of "*La Reine del Pianoforte*," according to the foreign journal we have seen, wherein Paganini has thus christened Madame de Belleville Oury. Madame de Belleville Oury has recently arrived from a continental tour of nine years of brilliant success through Russia, Austria, Prussia, Holland, Belgium, France, and lastly from Brighton, where, with Thalberg, Madame Oury performed in public to the great delight of many well-known dilettanti. Madame Oury is a Bavarian, and an eleve of the same master as Listz, viz., Cherzney; she was educated at Vienna, and in 1831 was married to our celebrated violinist M. Oury, at which period Madame Oury performed at the Court of Queen Adelaide, and at Paganini's concerts. The German and French critics speak of Madame de Belleville Oury's talents as possessing all the graces and delicate sentiments of her sex, combined with an unusual degree of refinement, and a brilliancy and force of execution rarely exceeded by masculine efforts. Madame Oury has already been appointed one of the Lady Professors of the Royal Academy of Music, and has adopted this country for her future residence.

PARIS.—GYMNAZE.—The month of May is decidedly unpropitious to the ladies. Not long since, we had to register the *fiasco* of Mme. Georges Sand at the Français, and now we have to record the *chute* of Mme. Acelot at the Gymnase. The rather catching title of *Les Honneurs et Les Maurs* led the world to look for some political or social satire in the piece, which would have afforded it the malicious pleasure of laughing at "things as they are," but the world in this case was doomed to be disappointed; for whatever may have been the intentions of the au-

thor, it soon became clear that a laugh, or any other indication betokening amusement, was out of the question. The first idea, as conveyed by the opening scene, seems happy, but is speedily overlaid by trivial details, having little reference to the spirit of the subject, and long before its termination the whole affair was found out to be a perfect bore, and voted accordingly. It is but right to add that, on the second night, owing to liberal curtailments, the piece went off much better than on the first, but we cannot assign *Honneurs et Maurs* any long or profitable share of existence. Another piece called *Les Mertuchons*, founded on the whimsical idea of opening a will 200 years after the demise of the testator, has been given here. The incidents and subject, being broadly farcical, were laughed at for their absurdity, and on this ground the little extravaganza must be set down as successful.

AMBOU.—*L'Habit Noisette* is the name of a trifle produced here, in which an elderly bore, having had a dispute with a young officer, waits upon him on a certain day each year with a cartel, wounds him "severely but not dangerously" as the English bulletins say, and leaves him under the surgeon's hands for at least six months, annually. The abominable old fire-eater repeats his visit on the very day the young fellow is to be married, and, as a thrust of cold iron is generally believed to be a particularly disagreeable preliminary to the hymeneal rite, strenuous efforts are made to pacify the ancient Hector, which succeed only upon the discovery that the intended bride is his own neice, and, in favor of their future relationship, he resigns his warlike intentions. This little plot, though not new to the stage, was favorably received.

GAITE.—A stirring melodrama, full of interest, has been produced here with great success, entitled *Aubrey le Médecin*. *Aubrey* is, or rather has been, a physician, who, privy to the birth of an illegitimate infant, holds the reputation of an English lady of exalted rank at his mercy. This terrible secret he is disposed to use in the most unprincipled manner for the advancement of his fortunes, and the position of the principal characters leads to a crowd of incidents, extremely well wrought out by the authors, which keeps the spectator on the tip-toe of expectation during the entire of the piece, the interest of which never flags. Ultimately, poetical justice is executed upon the villain, who receives his quietus from the hand of the son of the lady in question, who, by papers found on the body of *Aubrey*, is discovered to be a peer of England, and of royal blood, owing his birth, by the father's side, to no less a personage than the unfortunate Charles I. Frequent plaudits marked the feeling of the audience at several of the scenes, and on the fall of the curtain the authors were demanded with universal marks of approbation. Messrs. Desnoyers and Lopez were accordingly named with the usual honors. M. Lopez is, we believe, a young Spaniard, who evidently inherits no small portion of the dramatic talent in which the literature of his country is so rich. The acting of the piece, we should add, was tolerable, but no more.

The new ballet of *Le Diable Amoureux* is in full preparation at the Grand Opera, and will speedily be produced; but the continued indisposition of Mdlle. Grahn will prevent her appearing in it. We remark, that the pretty Mdlle. Maywood, who has been some little time withheld from the boards by the constant repetition of *Les Martyrs*, appears to-night. Inchindis is engaged at this theatre, and will soon make his *début*.

The Directors of the Museum of Natural History, at Brussels, have recently procured two very important specimens. One is the tapir of Sumatra, which is to be found in only a few collections; the other is the bird called *Apteryx Australis*, an object so rare, that until late years its existence was a matter of doubt. The museums of London, Vienna, and Brussels are the only ones which contain specimens of it.

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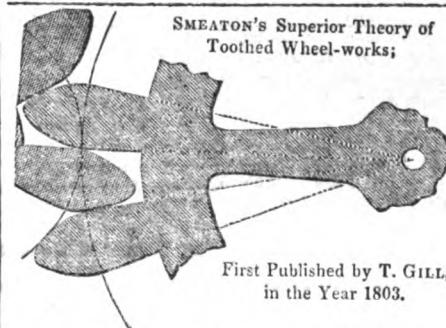
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THE HISTORY AND STUDY OF CHEMISTRY.

The following sketch of the history of chemistry, from its origin to its foundation as a science, is translated from the *Moniteur Industriel*. It contains, within a small compass, the prominent features which marked the progress of chemistry, but it is strongly tinged with the natural vanity of Frenchmen, which makes them assume credit for all improvements in science and the arts. It will be observed that in the enumeration of celebrated persons who have contributed to throw light on the science of chemistry, only two Englishmen are mentioned—Priestley and Davy—though it is well known that chemistry is indebted for many of its most valuable discoveries to others of our countrymen, both dead and living.

Chemistry is a science altogether belonging to France: it grew in the midst of the storms of liberty, and it supplied the first ammunition used in the defence of our territory. At the present day, applied to more useful purposes, it has become one of the most powerful elements of national industry. The whole world is its laboratory, and we cannot move a single step without meeting some of its wonderful productions. Let us, in short, say with Chaptal: "Chemistry is a torch, which the hand of man has suspended in the sanctuary of the operations of nature and of art, to throw light on all their processes."

The generality of persons entertain not even the simplest ideas of a science which presents so many elements of instruction and of wealth. Among the infinite number of those, for instance, who drink water, there are few who know how to distinguish the salubrious or insalubrious qualities which it may possess. There are few, also, who know how to discern the fraudulent mixtures with which their daily food is contaminated, and which chemistry often presents the easiest mode of detecting.

Artisans have no occasion to become chemists, like those who devote themselves especially to science; their business consists in profiting by the researches of philosophers, and in applying, by the aid of experience, the results of discoveries to practical uses. Agricultural chemistry is still in its infancy, but the agriculturist is now obliged seriously to attend to the action of the air, water, manures, the soil, &c., on the plants he intends to cultivate. To merchants, even though it is not

their business to add to the produce of industry, it is essential to be able to test the products offered for sale, and that they should compare the goods they receive with the samples.

Chemistry was studied with much success in the eighteenth century by Lemery, Stahl, Maquer, Beaumé, Scheele, and Priestley; but it was Guyton Morveau, Fourcroy, Laplace, Berthollet, Bergmann, Lavoisier, Darcet, and Pelletier, who rendered it altogether a new science, and extricated it from the chaos which made it almost inaccessible. It has latterly made still more rapid progress by the labors of Vauquelin, Klaproth, Rumford, Chaptal, Davy, and Gay Lussac, Berzelius, Thenard, Dumas, &c.

On considering the immense advantages that may be derived from the knowledge of chemistry, and the facilities which exist for obtaining it, it seems astonishing that chemical studies should be postponed for those of literature. We admit, however, with pleasure, that the advantages to be derived from chemistry are beginning to be perceived. Chemical products requisite for experiments may be procured in all towns of the least importance; elementary books on the science increase, and public courses of instruction are given, at least in the larger towns. Let us hope that this beautiful science, being more and more diffused, may at length become one of the integral parts of public education.

Most of the authors who have written on the history of chemistry have traced the origin of this science to the highest antiquity. Their researches extend to the first ages of the world, and they even discover chemists in the times before the deluge; but lost in the darkness of those distant ages, they, like all other historians who have attempted to penetrate them, have only made obscurity more profound.

It is not till the invention of writing that we can trace the progress of chemistry, as of all the sciences, for it is then that the distinction was made between real philosophers and mere artisans. Of those philosophers whom chemists consider the first to have arranged his chemical researches in a definite order was Siphos, who lived, it is supposed, more than 1900 years before the Christian era. He was known to the Greeks by the name of Hermes, or *Mercurius Trismegistus*. It is from him that chemistry has derived the name of *Hermetic philosophy*.

In later times, all chemists were seized with a singular mania. It was a kind of epidemic, which proves to what extent the weakness of the human mind may sometimes be carried. It excited chemists to make surprising efforts, and admirable discoveries; nevertheless it presented great obstacles to the progress of chemistry. The disappearance of this epidemic can only be dated from the last century, which was a real epoch of regeneration

for this science. It will be understood that the mania to which we allude was the attempt to make gold. From the time that this metal became the representative sign of wealth, it lighted up new fires in the furnaces of the chemists. It seemed, indeed, natural, that those who possessed peculiar knowledge of the nature and property of metals, who knew how to work them, and make them assume a variety of forms, should endeavor to produce the most beautiful and the most valuable of them all.

They divided the metals into two kinds: into noble or perfect metals, and impure and imperfect. Gold was the king of metals, and all the others were ranked after it according to their pretended purity. The alchemists conceived it was possible to transform the less pure metals, such as lead and iron, into gold and silver. This was the great work, the philosopher's stone, the discovery of which was considered the most noble attainment to which it was possible to aspire. This new object of their researches so completely absorbed all their thoughts, that they lost sight of the solution of any other problem. The circle of their science, instead of extending, was confined to a single point, to which they directed all their labors. The thirst of gain was their moving principle; they became abstruse and mysterious.

This circumstance, which prevented them from making any proper advances, was nevertheless the means of their not being classed with common artisans. They had a kind of affinity to the learned, and profiting by this advantage they assumed the name of philosophers, or chemists, *par excellence*, which was expressed by the Arabic particle *al*, that they prefixed to the name of their science; whence is derived the name of *alchemy*, or *alchemists*. In order to support their title, they made books, like philosophers; they wrote of the principles of their pretended science, but in so obscure a manner that they threw very little light on their art. There is no subject on which so many volumes were written: for there are upwards of six thousand treatises on alchemy. The history of the alchemists is not less obscure than their writings; neither the names of the greater part of them, nor the time when they lived, are correctly known; nor whether the books that are attributed to their different writers, were really their productions; in short, it appears that all belonging to them must for ever remain a mystery.

Such was the state of chemistry, or rather of alchemy, until the sixteenth century. It was at that epoch that the celebrated alchemist Paracelsus, a man of an active, impetuous, and extravagant mind, added a new folly to that of his predecessors. As he was the son of a physician, and a physician himself, he imagined that it would be possible to

discover by means of alchemy a mode of indefinitely prolonging life, or the *universal panacea*; he died, nevertheless, at the age of 48.

This mad project found, notwithstanding, many partisans among the alchemists. They abandoned themselves to the search after the philosopher's stone and the universal panacea, and imagined that these miracles would be effected by one and the same process. Many among them boasted of having succeeded, and called themselves *adepts*.

By degrees, the universal medicine, though the most foolish of all the ideas that entered the heads of the alchemists, became nevertheless the foundation of a rational system of chemistry, which was laid upon the ruins of alchemy. The vigorous mind of Paracelsus had dared to open a new path Declaiming incessantly against the ancient system of pharmacy, which contained few chemical preparations, he undertook to bestow immortality by his chemical medicaments. His successes, though not by any means equal to his promises, were nevertheless prodigious; and he effected many surprising cures, especially by the use of preparations of mercury. The different branches of chemistry, were from that time, gradually united, examined, and compared in a manner sufficiently enlarged and profound to unite them in one rational form, so as to lay, in fact, the real foundations of chemistry, considered as a science.

We are now arrived at the most prosperous days of chemistry. The taste of the present age for science, the zeal of a multitude of illustrious and enlightened amateurs, the profound knowledge and the ardor of our modern chemists, all appear to promise the greatest and the most brilliant success.

EFFECTS OF THE FIVE PER CENT ADDITIONAL DUTY.

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So much for the existing practice. We will, however, go further, and aver, that an *equitable* consideration of the subject would bring us to the same conclusion. For if this additional duty should fall on the merchant after he had sold his goods, he must individually sustain the whole loss occasioned by the new tax, whilst the purchaser would have the full advantage of any rise in the retail disposal of the articles which he had bought at the old duty. This, it appears to us, would be the reverse of justice and equity. But on the other hand, when the buyer is called upon to advance the additional tax, he has the opportunity in the consequent rise of price in the retail trade, of repaying himself for the unexpected advance which he is called upon to make, when he finds it expedient or

necessary to clear the articles which he, or his agent for him, had purchased at the old duty.

That this is the right view of the subject, might be further shown, moreover, in the case of a reduction in the amount of duty. Had the duty on sugar been reduced, would the buyer be compelled to pay the 24s. to the merchant, that the latter might benefit by the amount of the reduction and beyond the profit he had anticipated at the time of the sale, whilst the buyer would have no means, on account of the proportional reduction in the retail price, of getting any part of this returned to him by the consumer?

In cases in which the agent has anticipated orders, he must without doubt, as is noticed above, be held to be the buyer, and, as such, liable to pay the increased duty, as he would be to claim a reduction, had such taken place. On the whole, then, and for these reasons, we deem it to be a matter of unquestionable equity, that the new duty, under the circumstances specified, should be paid by the buyer. He alone of the contending parties is in a situation to recover the additional amount from the consumer.

The New Per-centge Duty as it affects the relative position of the Baltic and the American Timber Trade.

The mode of altering duties by per-centages is in itself sufficiently simple, and therefore in most cases likely to secure important advantages. But as might be anticipated, to these advantages there are many exceptions. In none, however, does the injury appear more prominent than in the timber trade.

On Baltic deals, the duty was £22 the great hundred. On American, £2 10s. the great hundred. The difference, or protecting duty, was consequently £19 10s. per great hundred. This it may be presumed was deemed a fair state of things. By the new imposition, however, Baltic deals pay £23 2s., whereas American deals pay £2 12s. 6d. the great hundred. Thus the difference, or protecting duty, amounts now to £20 9s. 6d., thereby giving an advantage of 19s. 6d. per great hundred to the American merchants.

The relative position of the Baltic and the American merchant is thus altered to a degree that must be highly detrimental to the former, and that could not, in our estimation, ever have been contemplated or intended by the Legislature.—*Journal of Commerce.*

A LIST OF PATENTS SEALED FROM APRIL 28TH, TO MAY 23RD, 1840.

(Continued from Page 274.)

ENGLAND.

WILLIAM CRANE WILKINS, of Long Acre, lamp manufacturer, and MATTHEW SAMUEL KENDRICK, of the same place, lamp-maker, certain improvements in lighting, and in lamps.—6 months, April 28.

JOHN TUKESON, of Ryder-street, St. James's, gent., for improvements in apparatus for consuming gas, for the purpose of light.—6 months, being a communication, April 30.

ORLANDO JONES, of the City-road, accountant, for improvements in treating or operating on farinaceous matters to obtain starch, and other products used in manufacturing starch.—6 months, April 30.

WILLIAM PEIRCE, of James-place, Hoxton, ironmonger, for improvements in the construction of locks and keys.—6 months, May 2.

ARTHUR WALL, of Bermondsey, surgeon, for a new composition for the prevention of corrosion in metals, and for other purposes.—6 months, May 2.

THOMAS GADD MATTHEWS, of Bristol, merchant, and ROBERT LEONARD, of the same place, merchant, for certain improvements in machinery or appa-

ratus for sawing, rasping, or dividing dye wood or tanners' bark.—6 months, May 5.

WILLIAM NEWTON, of Chancery-lane, patent agent, for an improved apparatus and process for producing sculptured forms or devices, in marble and other hard substances.—6 months, being a communication, May 5.

GEORGE MACKAY, of Mark-lane, ship-broker, for certain improvements in rotary engines.—6 months, being a communication, May 5.

WILLIAM BEETSON, of Br ck-lane, Old-street, brass-founder, for improvements in stuffing boxes, applicable to water-closets, pumps, and cocks.—6 mths, May 5.

FRANK HILLS, of Deptford, manufacturing chemist, for certain improvements in the construction of steam-boilers and engines, and of locomotive carriages.—6 months, May 5.

BERNARD AUBE, of Coleman-street-buildings, gent., for improvements in the preparation of wool for the manufacture of woollen and other stuffs.—6 mths, May 7.

THOMAS WALKER, of Gabashielo, Selkirk, mechanic, for improvements in apparatus, applicable to feeding machinery employed in carding, scribbling, or teasing fibrous materials.—6 months, May 7.

HENRY HOLLAND, of Darvin-street, Birmingham, umbrella furniture maker, for improvements in the manufacture of umbrellas and parasols.—6 months, May 7.

HENRY MONTAGUE GROVER, of Boveney, Buckingham, clerk, for an improved method of retarding and stopping railway trains.—6 months, May 7.

MILES BERRY, Chancery-lane, patent agent, for certain improvements in treating, refining, and purifying oils.—6 months, being a communication, May 9.

AUGUSTE MOINAN, of Philpott Terrace, Edgeware-road, clock-maker, for certain improvements in the construction of time-keepers.—6 months, May 9.

RICE HARRIS, of Birmingham, gent., for certain improvements in cylinders, plates, and blocks, used in printing and embossing.—6 months, May 12.

GEORGE JOHN NEWBERRY, of Cripplegate-buildings, manufacturer, for certain improvements in rendering silk, cotton, woollen, linen, and other fabrics waterproof.—6 months, May 12.

HENRY DIRCKS, of Liverpool, engineer, for certain improvements in the construction of locomotive steam-engines, and in wheels to be used on rail and other ways, parts of which improvements are applicable to steam-engine generally.—6 months, May 12.

JOHN DAVIDSON, of Leith Walk, Edinburgh, for an improvement in the method of preserving salt.—6 months, May 12.

PETER BRADSHAW, of Dean, near Kimbolton, Bedford, gent., for improvements in dibbling corn and seeds.—6 months, May 12.

JAMES WALTON, of Sowerby-bridge, Halifax, cloth-dresser, for improvements in the manufacture of beds, matresses, pillows, cushions, pads, and other articles of a similar nature, and in materials for packing.—6 months, May 12.

RICHARD FOOTE, of Faversham, watchmaker, for improvements in alarms.—6 months, May 12.

JOHN JOSEPH MECHI, of Leadenhall-street, cutter, for an improved method of lighting buildings.—2 months, May 12.

BRYAN L'ANSON, Bromwich, of Clifton-on-Teme, Worcester, gent., for improvements in stirrup irons.—6 months, May 13.

HENRY ERNEST, of Gordon-street, gent., for certain improvements in the manufacture of machines, usually called beer engines.—6 months, May 13.

WILLIAM HANNUS TAYLOR, of Norfolk-street, Strand, esq., for certain improvements in the mode of forming or manufacturing staves, shingles, and lathes,

and the machinery used for that purpose.—6 months, May 20.

WILLIAM BUSH, of Camberwell, merchant, for improvements in fire-arms and in cartridges.—6 months, being a communication, May 20.

JAMES BUCHANAN, of Glasgow, merchant, for certain improvements in the machinery applicable to the preparing, twisting, and spinning, and also in the mode of preparing, twisting, and spinning of hemp, flax, and other fibrous substances; and certain improvements in the mode of applying tar or other preservatives to rope and other yarns.—6 months, May 22.

JAMES COLLARD DAVIES, of College-place, Camden-town, jeweller, for an improved clock or time-piece.—6 months, May 23.

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING MAY 23, 1840.

ENGLAND.

Not a single patent has expired during this week.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO THE WEEK ENDING MAY 23, 1840.

(Continued from No. 42.)

ENGLAND.

THOMAS and JOHN WHITELEY, Stapleford, near Nottingham, lace-makers, improvements in warp machinery, May 7.—This specification is so complicated and difficult in its arrangement, that it is a question whether a workman would be able to understand it sufficiently to enable him to make a working model from the drawings.

The first improvement is for the mode of constructing warp machinery in such manner that the threads, in addition to their interlooping diagonally with each other, shall be caused to traverse from selvege to selvege.

There is also a mode of constructing and combining the sinkers with the presser bar, in connection with the independent nebs.

The needles are worked with two threads, in place of one, which may be of various colors, and the fabric when completed, on this method of interlooping, becomes so secure that it may be cut in any direction without unfastening or unravelling.

Moses POOLE, Lincoln's-inn, improvements in making nails, bolts, and spikes, May 12.—This is an improvement on the invention for cutting nails from sheet iron. The continued motion of a drum affixed to the end of a cranked axle, causes a number of upright rods to work the toggle joints for holding the nails during the process of heading, and while the rollers are pressing the metal, and forming the chisel points of the nails.

A horizontal lever, set in motion by a crank of the axle, puts in motion an upright bar that works the cutting lever, and vertical presser or rammer. The hot plate of metal is placed under the chap of the cutting lever, and as soon as the pieces to form the nail are cut off, it falls into a vertical tube, and the vertical presser immediately pushes it between the rollers, on to the toggle joints, while the heading machine below, completes the formation of the nail, bolt, or spike.

JAMES WHITE, Lambeth, Surrey, engineer, improvements in machinery for moulding clay to the form of bricks and tiles, and also for mixing, compressing, and moulding other substances, May 12.—An upright

cylindrical box or case has working in its centre a vertical axle, which has a broad leaf screw projecting, so as to touch the inner surface of the cylindrical box. The clay is placed in the box above the screw, which, in turning round, draws the clay to the bottom, and compresses it into moulds for forming bricks or tiles.

The axle of the screw is hollow, and fine holes are perforated in it, through which water is permitted to percolate, in order to prevent the clay adhering to the machinery; there are also lubricating tubes connected with the moulds.

This improvement, with the addition of cutters projecting from the axle, is also used for mixing peat, similar to a pug-mill; the aqueous particles are allowed to pass off; when the more solid are compressed into the moulds.

The last improvement is for placing the peat into a long cylindrical box, placed upright and with a sliding lid fitting air-tight in the upper part. The peat rests on a false bottom that is perforated with fine holes, and the space below being exhausted by an air-pump, the sliding lid is forced down the cylindrical box, by means of atmospheric pressure, whereby the peat or bog is gradually compressed, and freed from all aqueous matter.

WILLIAM CHESTERMAN, Burford, Oxford, civil engineer, improvements in stoves, May 12.—The fire-box is surrounded with fine bricks strongly cemented together, so as to prevent the escape of gas, which in ordinary stoves frequently becomes very obnoxious; an outer case encircles the fire-bricks. Just above the fire-box are two lateral openings, one is for the escapement of smoke, and the other is for the reception of a valve-lid placed obliquely, and through which space the fuel is admitted to supply the fire-box. Over these lateral openings is placed a chamber, forming part of the stove; in the centre of this chamber, and just over the fire-box, is affixed a reservoir of water, with an inverted cup sliding on the top, so that the water being heated above 212 deg. Fahr., will cause the cup to rise and work a lever or beam connected with a rod leading to the valve below, which partly closes the passage that admits the air to support combustion.

It is evident that the opening and closing of the valve depends on the heat of the water in the reservoir, which also regulates the combustion of the fuel.

CHRISTOPHER EDWARD DAMPIER, of Ware, Hertford, attorney, an improved weighing machine, May 14.—A circular plate or disc is formed with a nave on its centre, through which a hole is made to receive an axis projecting from an upright standard, or connected with a balance holder; a weight acting as counterpoise is attached by a link to the bottom of the disc, and on a line with the axis. The scale for holding the article to be weighed is affixed on a line with the horizon, and at right angles with the weight acting as counterpoise. On the upper arc of the disc is arranged a geometrical or graduated scale, for indicating the number of ounces or pounds. As the article to be weighed depresses the scale on one side, the weight acting as counterpoise is elevated on the other; and the geometrical scale on the upper part of the disc is moved, while the stationary index points to the amount of the weight to be ascertained.

There are other modifications, but they all work on the same principle.

WILLIAM WISEMANN, George Yard, Lombard-street, merchant, improvements in the manufacture of alum, May 16.—The object of this invention is to free the alum from iron and alkali. Potter's clay is calcined to red heat, and while cooling, it should be kept from moisture. A sufficient quantity of sulphuric acid, 60 deg. Beaumé, should be mixed with the calcined powdered clay, in order to dissolve, but not render it to paste; it should be stirred till dry, and then it should be reduced with hot water. Prussiate of potash is added, which takes to the iron, and settles at the bottom; when the liquor above is composed of sulphuric acid and alumina, with water, which can be evaporated in the usual manner.

JOHN BURN SMITH, Salford, Manchester, cotton spinner, certain improvements in machinery for preparing, roving, spinning, and twisting cotton and other fibrous substances, May 16.—The specification, with the letters of reference to the drawings, are very troublesome to be understood, and it is a question whether a workman could make a model from them. It would be difficult to explain this invention without the aid of proper drawings. The principal features of the improvements are segmental racks to work out and in the carriage of the machine. Secondly, the faller wire with the scroll and snail pulley, for winding up the bottoms of yarns.

ROBERT and WILLIAM HAWTHORN, engineers, Newcastle-upon-Tyne, certain improvements in locomotives and other steam-engines, in respect to the boilers, and the conveying of the steam therefrom into the cylinders, May 21.—These improvements consist in dividing the present "fire box" of a locomotive boiler into two distinct compartments, and having two doors for the supply of the fuel, and of the introduction of a greater number of tubes (called return flues), which are not immersed in the water, but are surrounded by accumulated steam, and immediately above the fire tubes, if we may so call them, proceeding from the fire box.

The chimney is placed on the top of the fire-box casing, where the engine-man is stationed, so that the heated air has to pass through these return tubes before it can arrive at the chimney; the steam after it has performed its operation in the cylinder is allowed to pass into the chimney through a pipe in the inside of the boiler, the object of which is, that every advantage is taken of any heat available to the generation of steam, and, consequently, a saving of fuel.

The next improvement is, that a pipe perforated with a great number of holes is placed longitudinally inside of the boiler; from this pipe the steam is conveyed to the steam cylinders. This method of introducing the steam into the cylinders, the inventors consider will obviate what is termed priming.

The arrangements of the cylinders and other machinery are precisely as they are at present constructed.

JOHN PARSONS, Fulham-road, Middlesex, victualler, for improvements in preventing and curing smoky chimneys, May 21.—The inventor claims the introduction of a cast-iron bar on which the bricks are to rest at the fire-place, and of a plate placed at the back of the fire, having inclined surfaces, through which the smoke is to pass.

The second improvement consists in the formation of the chimney top: a number of holes are made about the middle of the top, similar to the ventilator placed on the roof of a smithy; above the holes the top is enlarged in its diameter, and is about the length of its diameter.

JOHN FABMAN, Middlewick, Chester, gent., for certain improvements in the mode of constructing switches for connecting different lines of railways or distant rails, and for passing locomotive steam and other engines and other running carriages and wagons from the one to the other of such railways or rails, and of certain applications connected therewith, May 21.—These improvements consist in introducing arrangements on the locomotive engine or carriage under the direction of the engineer, by which he can open the switches without the necessity of having men regularly stationed at the points. A crank or projecting piece of iron is attached to the framing of the locomotive engine, which can be turned by the engineer, and made to depress a lever placed by the side of the rails connected by other levers to the switches. The inventor does not confine the application to the locomotive engine, the apparatus being applicable to running carriages, and such that the switches may be worked by men stationed for the purpose if preferred.

WILLIAM DAUBNEY HOLMES, Lambeth-square, civil engineer, for certain improvements in the construction of iron steam ships and other vessels, and also in means of preventing the same from foundering, also in

the application of the same improvements or parts thereof.—May 23.—These improvements in the construction of iron vessels are of a very important nature, inasmuch as they tend to the safety of the vessel by the introduction of air or watertight compartments through the sides of the vessel; and although entirely independent of each other, access is had to them by means of a man-hole from the deck; an air pump is made to communicate with these tanks, by which they may be filled with compressed air, which will add to the buoyancy of the vessel if required; if, on the other hand, the vessel is light and ballast is necessary, they may be filled with water. The invention is applicable to war ships, and the damage from shot can be received into these compartments without injuring the whole. The next improvement is in the manner in which the timbers are placed, by which means the vessels may be made much stronger and yet lighter; this cannot be clearly described without the aid of reference to the drawings.

Another improvement is, by the introduction of a series of pipes, placed across the vessel, and open to the sides, through which the water may pass; this is applicable to the cooling of cargoes, which are liable to be heated, such as corn; the water in these pipes tends to keep the grain cool.

Another improvement in canal navigation consists in attaching any number of boats together by means of an India-rubber substance fastened to the stern of the one and bows of the other; this the inventor considers would pass any curve which may be in the canal, and without increasing the resistance.

JOHN HUNT, Greenwich, Kent, engineer, for an improved method of propelling and steering vessels, May 23.—In this improvement, the inventor attaches on the end of the crank-shaft of the steam-engine, a bevel wheel, acting into another wheel, whose shaft is placed vertically, and in the same position as the rudder in other vessels, on the other end of this vertical shaft is another wheel acting on a pinion, whose axis is in the same plane as the keelson of the vessel. On the shaft is fixed the propeller, having four small arms or boards projecting from its axis, these arms have an oblique position similar to the screw.

The position of the propeller is changed at pleasure by the steersman to any angle with the keelson, by a shaft acting upon the propelling shaft by means of a wheel and pinion; and on the end of this shaft is fixed the wheel for changing the position of the propeller, similar to those of ordinary rudders.

RICHARD HORNSBY, Spittlegate, Lincoln, agricultural machine maker, for an improved machine for drilling land, and sowing grain and seeds of different descriptions either with or without bone or other manure, May 23.—In this improvement the inventor claims the application of a wheel called the seed and manure depositing wheel: this wheel is introduced into the machine as at present constructed, and is made to revolve (and can be regulated to any required velocity) by a band passing over a pulley fixed on the axle of the machine; it may deposit seed only, or with manure: the seed is conveyed to the wheel or barrel by tin boxes in the usual manner hung from the machine.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specifications will be published in the "INVENTORS' ADVOCATE," of July 4. Each party will receive, in addition, a private communication to the same effect.

Lawrence Wood Fletcher, Charlton-upon-Medlock, Manchester, machinist, due June 23.

Thomas Furnystone, Newcastle, coal-master, due June 24.
Thomas Hardeman Clarke, Birmingham, cabinet-maker, due June 24.
John Leo Nicolas, Parish of Clifton, Bristol, gent., due July 1.
Samuel Lawson and John Lawson, Leeds, engineers, due July 1.

FOREIGN CORRESPONDENCE. (FROM OUR OWN CORRESPONDENT.)

FRANCE.

The French Academy of Moral and Political Sciences has proposed the following question as the subject of the quinquennial prize of 5,000 frs., founded by M. Beaujour: "What are the most useful practical applications that can be made of the principle of voluntary private association for the relief of distress?"

A meeting of the principal French manufacturers of locomotive steam-engines was held at Paris last week, when a committee of twelve members was appointed for the purpose of urging the government to encourage French manufactures, by ordering of them the engines that will be requisite for the many lines of railway now forming, and for the Transatlantic steam ships.

IMPORTANT COMMERCIAL ADJUDICATION.

The *Cour Royale* (Paris) has just given a decision in a case between two British merchants resident in Paris, which is of some importance, from its modifying what has generally been understood to be a received principle of French courts, that "no action for debt contracted in France could be sustained by one foreigner against another." Messrs. Muldoon and Ormsby having dissolved partnership, a "tribunal of arbitration" decided in favor of Mr. Ormsby, that Mr. Muldoon was liable to pay him a certain sum claimed, and that even the *contrainte par corps* (arrest of the person) might be applied in case of non-payment. An appeal was laid against this by Mr. Muldoon, but the *Cour Royale* has confirmed the decree of the inferior tribunal, on the ground that it refers to acts of commerce between foreigners resident in France; that, independently of acts of commerce being cognisable by the law of nations, and therefore subject to be regulated by the laws of the country where they take place, the parties in the present case had recognized the jurisdiction of the French tribunals; and that, therefore, the law decreeing the *contrainte par corps* is applicable.

BELGIUM.

CAUSES OF THE INFERIORITY OF BELGIAN IRON MANUFACTURES TO THOSE IN ENGLAND.

The public press has for several years deplored the interruption of the important railroad of Sambre and Meuse, in the centre of a very productive part of Belgium. Indeed many interests claim the construction of this railroad, and much capital remains unproductive by want of the means of communication. But the question of local interest is entirely absorbed by one of the most important connected with the manufacturing industry of Belgium. On the construction of this railroad depends, in short, the power of Belgium to resist successfully English competition in the manufacture of iron. Belgium is possessed of every element of superiority, and, notwithstanding, she remains in an admitted state of inferiority.

The Belgian iron ores are superior in quality to those of England. The country between the

Sambre and the Meuse could produce one eighth of the whole produce of England, or one third of the produce of France; and, nevertheless, England succeeds in maintaining a formidable competition with Belgian iron.

The important facts published in the following account deserve to attract the particular attention of the government and of the public:—

The blast furnaces between the Sambre and the Meuse, (including those on both banks of the Sambre, above and below Charleroi), are 64 in number; they are divided into three groups.

That of the Sambre, or north group, is situated in a country abounding in coal; and contains twenty-four furnaces supplied with coke, and three furnaces with wood.

The middle group, situated in the middle of a carboniferous limestone formation, contains four furnaces worked with coke, and twenty-one worked with wood; and the middle group, which is situated in the carboniferous limestone bordering on French Ardennes, contains one furnace worked with coke, and eleven furnaces worked with wood.

The erection of the greater part of the furnaces of the valley of the Sambre is to be attributed to the abundance of coal; and on this account they are at a distance of four or five leagues (12 or 13 miles) from the mines containing the best quality of ore. The blast of all the furnaces worked with coke is produced by steam-engines.

The situation of the furnaces of the second and third groups is to be attributed to the abundance of ore, and of forests in their neighborhoods. The blast in these is produced by water power.

If all the furnaces were in activity, admitting each furnace worked with coke to produce 10,000 kilogrammes of iron a day, and each furnace worked with wood 1,000 kilogrammes, the 64 furnaces between the Sambre and the Meuse would produce annually 125,000 tons of iron, which is upwards of one third of the produce of all France, which amounted in 1836 to 308,363 tons; and it is equal to one eighth of the produce of England in 1838. The total value of the iron manufactured in France in 1836, being 60,916,669 frs. by taking the same average price for the Belgian iron, the country between the Sambre and the Meuse could produce yearly the amount of 24,723,000 frs.; and adding to these furnaces the produce of all those of the provinces of Hainault, Namur, Liege, and Luxembourg, they would produce upwards of 200,000 tons, which is five times the quantity of iron required for the consumption of the country, or about two thirds of the produce of the immense territory of France, including 35 millions of inhabitants.

Europe offers few examples of similar richness in mineral produce from such a small extent of territory, and it is really melancholy to think that those immense sources of prosperity should have been paralysed for centuries by the absence of proper means of communication.

In considering the natural causes which should secure to the Belgian iron manufactories a great superiority over the English, it is astonishing to think that the contrary should be the case, and the causes of this singular anomaly ought to be known.

The smelting according to the English process with coke, has been adopted in Belgium about twenty years, and has been greatly extended since 1834; at which period the principle of association arose in Belgium, and those immense manufactories on the banks of the Sambre, at Monceau, at Couillet, at Chatelineau, and on the banks of the Meuse in the province of Liege, were erected.

The founders of these manufactories had made their estimates on the average price at which the ore and coal had been sold for a great number of years, and they anticipated large profits to result from their undertakings.

The number of furnaces worked with coke soon increased beyond all expectation, the produce of the coal mines were not sufficient to provide them with fuel, and the proprietors of those mines raised the price of coal one half. This example was followed by the owners of the iron mines, who

considerably increased the price of ore; feeling certain that those large iron manufactures would be either obliged to submit to their conditions, or to stop their works. The consequence was, that mining laborers raised their wages from 20 to 25 frs. a day; and families composed of a few individuals made in a short time what in the country might be termed a fortune.

The carriers increased their prices in proportion, as the yearly supply of ore for those manufactures on the banks of the Sambre must be removed in the short space of four months, hence the increase of the price of transport; and while the iron manufactures of the banks of the Sambre had made such wonderful and rapid improvements, by the substitution of coal for wood, the means of communication between the Sambre and the Maese were totally neglected. The roads of that country are quite impassable during two thirds of the year, and even during the four months of the fine season, forty-eight hours of heavy rains are quite sufficient to interrupt the communications.

The raising of the price of ore, coal, and carriage, obliged the owners of forges to use ore of inferior quality, extracted at little expense, from near the surface of the ground; immense quantities of inferior iron were offered for sale, and Belgian iron lost that superiority which the good quality of the ore should have secured it over English iron.

These are the real causes of the relative inferiority of Belgian iron, from which it is in the

power of Belgium easily to raise herself, having coal fit for making coke, excellent ore, and wood, which is used for manufacturing iron of first quality, and steel. As to motive power, Belgium is favored with a great number of streams and important waterfalls, which are far from being all made useful. The erection of water-works is, perhaps, more expensive than the erection of a steam-engine of equal power; but this last consumes one third or one quarter of the coal required for the smelting of the ore.

In Belgium the distance between the iron mines and the manufactures is generally four or five leagues (12 or 15 miles), and it is notorious that the imperfect means of communication is the sole cause of her actual inferiority. The railroad between the Sambre and the Maese would unite the iron mines with the manufactures, and enable them to receive their materials regularly and at a moderate expense; and thus place them in this respect in the same condition with English manufacturers.

The causes of the inferiority of Belgian iron manufactures that we have mentioned, point out at the same time the means for obtaining that superiority which we so strangely neglect.

It is expected that cotton sales will be made. Permission has just been obtained from the government, through the application of an English house here (J. T. and Co.), to export cotton of private growth, until now a strict monopoly of the government, to pay a fixed export duty, which will be fixed hereafter. It is supposed the duty will be from two to three dollars the cantar, which will be cheerfully paid, and may be considered a great point gained, as this measure will afford additional inducement to the present speculators in land to bestow increased attention, and the necessary outlay on the improved cultivation of the plant, by which the cotton of this country would be susceptible of such very great amelioration. At present, the quantity of cotton in private cultivation is very limited; but it will, in consequence of this measure, be much extended, and the quality and cleanliness greatly improved. Hitherto it was merely necessary to produce cotton sufficiently good to be received into the Pacha's stores, and paid for at his price. Now, proprietors will enter into competition to produce the qualities best appreciated in the markets of consumption, and most probably next year you will see some very pretty parcels imported from this country. It is understood, that the duty on the cotton of private growth is to be regulated by the difference between the price the government pays the native cultivators, and the price of which it is resold to the merchants in Alexandria. The export of flax is also thrown open on the same conditions.

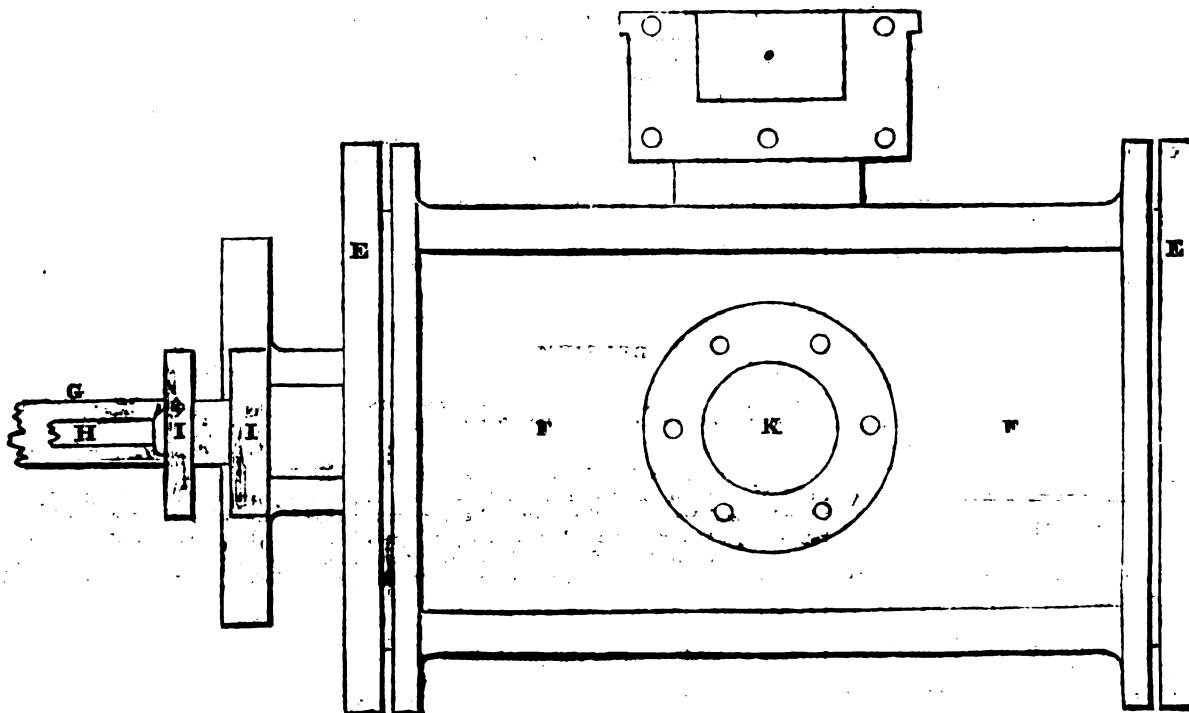
EGYPT.

So soon as the Pacha returns to Alexandria from a tour of inspection which he meditated, it is ex-

LOCOMOTIVE ENGINE ON THE BELGIAN RAILWAY.—Figure 3.

TRAFFIC ENGINE.

PLAN OF THE CYLINDER.



TRIESTE.**COMMERCE OF TRIESTE.**

The increasing prosperity of the port of Trieste, in which the far larger portion of the foreign commerce of Austria centres, led to an establishment for the promotion and extension of steam navigation, some time ago, which has been carried on with considerable activity since, and managed with great skill. The company is a branch of the Austrian Lloyd's, and the steam-boats employed are said to be much superior in every particular of speed, regularity, and cleanliness on board, to those of France in the Mediterranean, and yet, it is said, can be sailed at less cost, from the lower rate of wages as well as from the superior qualifications of the men and captains in charge. All the steam-engines and machinery were constructed specially in this country. By a report laid before the shareholders last year for 1838, it would seem that so far the enterprise had not been very profitable however, although it is understood that some improvement had since been experienced, of which, however, no special details are given. It may be interesting, as a point of comparison, to notice a few particulars of the report for 1838, which it may be mentioned was the second year of the existence of the company.

At the end of 1838 the company were in possession of ten steam-vessels, of which seven were in active service on the four following lines:—From Trieste to Venice, two, making three trips weekly, going and returning; from Trieste to Ancona, one, making two trips monthly in the same manner; from Trieste in Dalmatia, with route to Lussine Piccolo, Zara, Sebenico Spalatro, Sesina, Cursola, Ragusa, and Cattaro, one twice a month going and coming, from March to February; from Trieste to the Levant, three, two departures. The last line is subdivided into two, one from Trieste to Syra, with route to Ancona, Corfu, Patras, and Athens, in which two steamers are employed; and from Syra to Constantinople, touching at the Dardanelles, at Mitylene and Smyrna, in which one steamer is engaged. In August, 1838, the line between Syra and Alexandria, which had been undertaken for nine months, was abandoned as unprofitable. The line to Ancona direct, established in December of the same year, was a trial only, which was to be carried on until the close of the fair of Sinigaglia. Of the three remaining, one steamer was stationed at Constantinople as a tug-boat for the shipping of the company in the Bosphorus, and at undetermined periods to make occasional trips from Constantinople to Salonica and Alexandria. The second was in reserve at Trieste to replace any of the others when under repair. The third, at the close of 1838, was laid up for repairs, in consequence of considerable damage sustained through being run foul of by a French steamer, wilfully and through jealousy, as supposed. The number of trips in Venice within the year was 156, of passengers 14,288 of packages 3,527, of parcels 10,355, money and objects of value 7,215,990 florins. The total amount of traffic on all the lines together is thus stated:—

Number of Voyages	214
of Passengers	21,959
of Packages	28,346
of the weight of Quintals ..	37,318
of Parcels	14,138
of Money, &c., florins ..	10,849,358
of Letters	71,071

The four lines produced the following amounts of gross revenue from freights, fares, &c.:—

	Florins. Kreutz.	0
From Trieste to Venice	112,409	42
Trieste to Ancona	18,142	16
Trieste in Dalmatia.....	13,225	17
Trieste into the Levant, both lines.....	361,409	42
Total.....	504,779	0
Expenditure for keeping the steamers in order, expenses on board, fuel, &c.	485,113	0
Balance.....	79,666	0

It must be observed, however, that neither the general charges of management, nor those of commissions and agencies, at the various places on the lines of communication, are included under the head of this statement of expenditure, and, therefore, the balance resulting must not be considered as representing an account of net profits. As no notice appears in the documents from whence these details are taken of any declarations of dividend on capital, it is not improbable that to the date but little profit was realised for the shareholders, which would not be surprising, considering how short a period the enterprise had then been carried on.

NEW ZEALAND.**COLONISATION OF NEW ZEALAND.
GLASGOW PUBLIC MEETING.**

A meeting has just been held in the Assembly Rooms, Glasgow, for the purpose of petitioning her Majesty and both Houses of Parliament, "to adopt immediate measures for asserting the right of the British crown to the valuable islands of New Zealand, subject to the rights of the native inhabitants—preventing any aggression by the French, who threaten to establish a convict colony in the country, or by any other power—and for establishing British law and authority for the protection of our countrymen who have already gone, and the numerous body who are preparing to follow, to settle in New Zealand, as well as of the native inhabitants, who have often expressed their anxious wish for such protection by the exercise of British sovereignty." The following is an epitome of the proceedings:—

Baillie MITCHELL briefly stated the object of the meeting, and the necessity that existed for emigration. He stated that the price of wages in New Zealand varied from 40s. to 50s. and 60s. per week. He then pointed out the peculiar excellence of New Zealand; not only, he observed, would it become a favorable residence for our ill-employed operatives, but also it would enable them to become profitable consumers of our manufactures.

Mr. Alex. JOHNSTON moved the first resolution. He endeavored to impress upon those present the importance of the measure for which the meeting had assembled. He adverted to the existence of those islands which so beautifully studded the southern ocean; of their extent, their first discovery, and their various capabilities. He said that the islands of New Zealand were in size equal to Great Britain, situated in a warm, genial, and healthy latitude, of a rich soil, and that it abounded in minerals, consisting of copper, lead, tin, diamonds, and coal; and of fruit of the choicest kind. Its situation, he said, was well adapted for carrying on profitable commercial enterprises with South Australia. He pointed out the important results that must eventually accrue to Great Britain. He then went on to prove the importance of those islands, and referred to the writings of those, as evidence, who had visited that country from the days of Capt. Cook downwards; and he also referred to Lieut. M'Donnell who was then present, and who had published much valuable information regarding it. Mr. JOHNSTON observed, in strong terms, that the crown of this country possessed an undoubted right to those islands—and yet said that gentleman, that right is now called in question, not by foreign powers, but by a party among ourselves, who hold that the sovereignty had passed away from us in consequence of an officer, who had been appointed to reside at the Bay of Islands, having presented to certain native chiefs, as from the crown of England, what was termed a national flag. This was, however, nothing less than one of those manœuvres managed by certain parties for selfish purposes; but he felt bound to remark that if by any observations he threw blame on the Colonial-office, he should be sorry to be regarded, in so doing, as

throwing blame on the Government. Connected with the Colonial-office there were certain officials, both under this and former Governments, who had done much to thwart the New Zealand Company, and the friends of emigration generally, in their benevolent objects." If said he, the Colonial-office had an earnest desire to carry forward those principles of colonisation which had been lately in operation in New South Wales, and he hoped soon in Canada, and which had been found to answer so well in the former settlement, they never would have reduced the price of land to 5s. an acre. He then stated, that a company in London had adopted a new principle of colonisation, which was this—that they provided a fund of 15s. per acre, or 75 per cent. upon the land sold, which was to be applied for the purpose of sending out emigrants free of expense. I would, therefore, ask, said Mr. JOHNSTON, what proportion of this 5s. an acre could the Government afford for sending out emigrants to those distant colonies—(hear, hear). I hope that the Colonial-office will yet be brought to the bar of the House of Commons to answer for this and other matters to which I have referred. Mr. JOHNSTON concluded by remarking, that merely having a flag could not in itself be considered as an act depriving us of the sovereignty; every one knew that the island of Malta, over which our right was beyond dispute, possessed a separate flag, which circumstance might now be pleaded as a reason for Malta being independent of Great Britain.

Lieut. M'DONNELL, in seconding the resolution, spoke at some length relative to the circumstance connected with the flag given to a few chiefs by the English resident in a corner of the island. The New Zealanders, he said, were not yet sufficiently advanced in civilisation to be entrusted with legislation; and our recognition of their independence had virtually dispossessed us of all right to that country, and precluded us from interfering with any foreign power who might choose to colonise there. In order to retrieve the error into which Government had fallen, and to avert the calamities that must follow, he suggested that the act acknowledging the independence of New Zealand should be immediately repealed, more particularly as the declaration was signed in ignorance, and the New Zealanders, as a body, were desirous to place themselves under the allegiance of Britain. The Lieutenant observed, that France had manifested a strong desire to acquire an influence in that country, but that the New Zealanders entertained a rooted prejudice against the French. New Zealand, he remarked, was of the utmost consequence to Britain; it had abundance of wood for sparring, timbering, and decking ships, house-building, &c.; and, said he, should a war arise, New Zealand would be important to us as a maritime power. He then showed the necessity for an early settlement, by a reference to the evils of Canada, arising from the jealousies of the two nations, which he affirmed could only be avoided by the sovereignty of Britain being recognised by the New Zealand chiefs in their collective capacity, and by the establishment of British law previous to colonisation. Its resources, he said, were inexhaustible, being, as it were, a key to both Pacifics. He then went on to say, it abounded with beautiful rivers and safe harbors, with materials for ship-building. Lieut. M'DONNELL then referred to the capabilities of New Zealand for raising cotton and silk, the climate being congenial to the growth of the mulberry. The export of wool from Van Diemen's Land and New South Wales, he observed, had trebled to this country since 1830; and he said it was reasonable to expect that by colonising New Zealand, the settlers would turn their attention to the breeding of sheep—and, if such were the case, New Zealand and the sister colonies, would render Great Britain independent of the continental powers. Russia, he remarked, sent from 11,000 to 14,000 bales of wool annually to this country. If Russia would not admit our manufactured goods free of duty, the supply of the material from the colonies, New Zealand of course

included, would decidedly place us in a position to make our own terms with Russia, or any other power on the Continent. He concluded, by remarking that the prices of provisions were reasonable enough, and of which there was an abundance—pork 1d. per lb., and Indian corn 9d. per bushel. He said they had two crops of potatoes annually; and he jocularly added, if the colonists starved on that, they had better keep away altogether.

The Rev. Dr. M'LEOD then addressed the meeting, in a speech of great length. He commenced by saying that he was a friend to emigration in general. He then adverted to the redundancy of population in the Highlands, and the insufficiency of remunerating employment. He then said, many speeches had been made regarding the hand-loom weavers, but as yet no practical relief had been given. He then glanced at the state of things in Ireland, and observed that emigration was the only relief that could be afforded to starving thousands. He said every one was now looking forward to the colonies,—the richest for situations for their sons, the capitalists for disposing of their redundant capital. In the days of Queen Elizabeth, when the first charter was given for emigration, they were told that the Queen trod on reeds instead of carpets; kept on her clothes with wooden skewers, and fed on beef, salt fish, and ale. The first pair of gloves were worn by her; the wants of the people were few; and if the Queen lived in this style, they might guess how the bulk of the people fared. When emigration began, instantly there came home the produce of other countries in exchange for the produce of Britain; and from that moment England became a commercial nation. It was sheer nonsense to talk about emigration de populating the country. How, said the Rev. Gentleman, did Bristol become a great city? By its Transatlantic transactions. And how did Liverpool become a great commercial city, but by its American trade? And what made Glasgow what it is? Was it not first its trade with Virginia in tobacco, then its tea and rum, and now its trade in cotton? He followed in the wake of the former speakers, respecting the climate, soil, and productions of New Zealand, upon which he spoke at some length and eloquently. He said it was impossible to conceive too much of the position of New Zealand, or its immense advantages. He then made reference to the article of flax, observing, that in New Zealand flax was extensively grown, which was often 10 feet in height. When cotton was first introduced into this country, five or six bags were brought into the port of Liverpool, and were seized for payment of the duty; but the proper authorities were told that this was a small portion of cotton raised by way of experiment in America; and the duty was remitted. Now, what had been the result? In 1790 there were imported 1,000,000lb of cotton; in 1800, 35,000,000; and in this year he believed there were about 600,000,000lb of cotton imported. They thus saw how great things rose out of small beginnings. They received from Russia annually 100,000,000 cwt. of hemp; if a quarrel took place with that country, how consoling would it be to reflect that Great Britain could have a supply from New Zealand, where there was hemp enough to serve the whole navy; so that, even in this light, New Zealand must be regarded as one of the most valuable colonies which the country could possess. Civilisation, he remarked, was going forward to a great extent. The Rev. Gentleman spoke at some length of the character and disposition of the Aborigines; one of their distinguishing features was generosity. He reprobed the design of government in attempting to make New Zealand a penal settlement. He said, the number of convicts who had escaped from New South Wales had much impeded the progress of civilisation and christianity. It was, he said, an act of pusillanimity tamely to allow France to come and take possession of this fair field.—France had been long looking upon all our movements in regard to the colonisation of New Zealand. He said, whilst government kept putting off from time to time the discussion respecting New Zealand, France was fitting out ships, and preparing to send out a

colony for that country. He said, for the sake of christianity, they must oppose this most impudent attack of France on one of the colonies of Great Britain.—taking a country the right to which was never disputed till we ourselves raised the dispute. Who could look forward to the settlement of this French penal colony without horror? Would those felons keep faith with the poor natives among whom they were sent? and if they did not preserve faith with them, what would be the consequence? There would be insurrection, and there would be massacre. If the felons from Australia and those from France were to meet, he, at least, should not like to interfere. One portion of the poor natives would join with one party, and another portion with the other, and between the dreadful factions, the knowledge and the love of Christ, and all civilisation, would be destroyed. England and France would be drawn into the quarrel, and all this on account of one act of pusillanimity. The Rev. Doctor concluded, by observing, that we ought to support colonisation. It was delightful, he said, to think of great deserts rising up into villages and towns, laying the foundation of great empires. He then referred to the town of Melbourne, in Australia, which he said was now a city of from 3,000 to 5,000 inhabitants. He then glanced at the cities of Greece and Rome, and of the instability of all things human. Let us then, said he, give to our colonies the institutions we possess; and should the day ever come when internal political disunion shall destroy those institutions here, may our children enjoy the blessings they have transplanted to barren lands, where they may worship God on that altar that has been established by the blood of our forefathers. The rev. doctor concluded by reading the resolution.

Dr. PERRY seconded the motion.

Mr. FLEMING, of Claremont, proposed the next resolution.

Mr. LUMSDEN seconded the resolution.

Sheriff ALISON then addressed the meeting. He said, a field was now open for our surplus population, and that an immense market for our manufactures would to a certainty arise. He thought that what had been done by this country, in reference to New Zealand, gave to no foreign nation any right over her which we did not also possess—and that the question of the occupation of that country lay entirely between us and the New Zealanders themselves. They were willing, added he, to go on amicably with this country, and to co-operate with us in promoting a friendly spirit; but it was too clear that discord might arise; jealousies might come in—foreign interference might sow dissensions—convicts from New South Wales might escape there, and spread disaffection among the natives, and those regions might for ever be wrested from our grasp. How, then, was this to be avoided, and New Zealand kept securely in our hands? Only by taking the colony under the protection of the British crown. It would not be in vain that they pressed a resolution of this sort on the attention of Government. Government was aware that all important measures must, in the first instance, emanate from the community. The practical point to be considered was, how was the power of this country over these distant possessions to be maintained? He apprehended there was but one way in which this object could be obtained, and that was to establish a great system of emigration, headed by Government, and mainly supported by the resources of the nation. He remarked further, there was one way only of preserving our colonies, and the greatness and independence of England, and that was by augmenting the power of our navy. He went on to say, that, by a letter from Quebec, he learned that the Rambilles had arrived at that port in 28 days from this country, having on board a regiment of 900 soldiers. Now, if 900 soldiers could be taken to Quebec in 28 days, what could 50 ships of the line not do in transplanting emigrants to New Zealand? He knew it was said that this kind of service would "dirty" the navy, and would be disagreeable to the officers. Why, what did the

Romans do? They were masters of an empire that stretched from the shores of the Clyde to the Euphrates; but was this empire conquered and governed by acting upon the notion that the decks of their navy would be soiled? It was the Roman legions who made the great highways that connected Imperial Rome with the banks of the Euphrates and the shores of Caledonia—it was the roads formed across Europe and Asia that held together the Roman empire; and shall we be told that the Roman legions made these highways, but that the British navy may not construct those highways across the deep that will for ever unite together the boundless extent of the British dominions—and this, lest the decks of our navy should be dirtied, and the officers subjected to inconvenience!

Mr. CRAWFORD commenced, by observing that he hoped the present proceedings would not be without their effect on the legislature, especially on the Colonial-office. He said, it was to such enterprises as this that England owes all her commercial greatness. He said, it would indeed be a memorable circumstance in the history of the reign of Queen Victoria, that, in the commencement of her reign, a band of gallant adventurers went forth to colonise New Zealand, and to found another Britain in the southern hemisphere. Mr. CRAWFORD said, England had not acted as she ought to have done to so noble an offspring as New Zealand. He commented on the inconsistency in the conduct of Government, in sending out a governor, who declared he would plant the British standard in New Zealand, irrespective of the flag given to the chiefs in the Northern Island,—in sending out a costly Government house for his accommodation, in a ship chartered for the purpose of conveying it out—and in sending instructions to the governor of New South Wales to despatch soldiers to New Zealand for the protection of the settlers and the support of the governor's authority,—and then repudiating the right of the British Crown to exercise any dominion in New Zealand, on the ground stated by Lord John Russell, in the official memorandum issued from the Colonial-office, in March last, and which grounds, he contended, warranted no such repudiation.

The acts of the British parliament were the strongest acts of sovereignty that one nation could exercise over another, which were passed expressly for the punishment of offenders and the repression of crime in New Zealand. The line of policy pursued by the government in reference to New Zealand seemed not to be dictated by any thing like a noble or manly spirit, such as became British statesmen. Mr. Crawford concluded by seconding the resolution.

Mr. A. TENNENT moved the next resolution, which was seconded by Mr. J. P. REID.

On the motion of Mr. Lawrence HILL, a vote of thanks was then given to the chairman, and the meeting separated.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

EASTERN COUNTIES' RAILWAY.—The *Mercury* says, "The time when the opening of this railway to the Shoreditch terminus and the Brentwood station will take place, has recently given rise to considerable betting, and £100 to £10 has been offered and taken, that these portions of the line will not be opened by August. Mr. Braithwaite, the engineer, and other gentlemen connected with the company, have, we understand, accepted the offers of £100 to £10—a sufficient guarantee that the opening will take place sooner, and we have, notwithstanding these wagers, no reason to doubt that this will be as we stated, on Wednesday, July 1st. A grand hotel is to be built at Brentwood for the accommodation of passengers, as is also one at Shoreditch, and the company have expressed a determination to render every assistance by way of improvement of the country through which their line passes. Report says,

that some capitalists connected with the company purchased at some late sales a considerable quantity of land between Romford and Brentwood, where they are about to construct some splendid villa residences, which are much called for in this part of the country, and will be more so, owing to the convenient and quick transit to London by railway."

NORTHERN AND EASTERN RAILWAY.—This railway which forms a junction with the Eastern Counties' Railway at Stratford, is in active operation. About eight miles are already completed, ready to lay down the permanent rails. It is to pass Tottenham, and proceed to Bishop's Stortford in the first instance, and if the capital will hold out, thence to Cambridge. This company is to pay the Eastern Counties' Railway £7,000 a year for the joint use of their London station, and fourpence a head for all passengers—no bad gift for the Eastern Counties' Railway, should this arrangement be realised!—*Essex Standard.*

NORTHERN AND EASTERN RAILWAY.—A correspondent informs us that the opening of the first portion of the Northern and Eastern Railway will take place at least two months sooner than was anticipated—namely, in August last. We learn from other quarters, that the greatest energy is displayed in the prosecution of the works.—*Railway Times.*

BIRMINGHAM AND DERBY JUNCTION RAILWAY.—We understand the bill now before parliament for continuing the line of this railway direct to Birmingham has passed the committee of the House of Lords, and will receive the Royal Assent in the course of a few days.

BIRMINGHAM AND GLOUCESTER RAILWAY.—We can now confidently state that the Birmingham and Gloucester Railroad will be opened on or before the 1st of July next, from Barnet Green, eleven miles from this town, to Cheltenham. Conveyances will be furnished by the company to perform the intermediate distance, and by the end of the year it is fully calculated that the whole line will be completed and opened to the public from Birmingham to Cheltenham.—*Midland Counties' Herald.*

GREAT WESTERN RAILWAY.—The opening of the extended line to Steventon, a distance of 52 miles from London, is announced to take place on Monday, the 1st of June. We are happy to find that there is every probability of this grand undertaking being opened between Bristol and Bath early in September. The permanent way has been laid down in the neighborhood of Keynsham to a considerable extent, and the locomotive engine is at work. Between Keynsham and Bristol the road is all formed, and except finishing off the head of No. 3 tunnel, is in a perfect state. The beautiful elliptic Gothic-arched bridge across the Avon, near the station, is completed, and presents a most splendid appearance. The work does infinite credit to the contractors, Messrs. Wilcox and Son.

BRISTOL AND EXETER RAILWAY.—It is expected that a portion of the Bristol and Exeter Railway, as far as Bridgewater, will be opened in the course of the present year. We understand that the works are proceeding with great activity.—*Railway Times.*

HOLYHEAD RAILWAY.—A meeting of members of parliament and other influential gentlemen, interested in promoting a line of railway from London to Holyhead, via Chester and Bangor, was held on Monday last, at the Thatched House Tavern, St. James's Street, London. Lord Robert Grosvenor, having been called to the chair, observed, that the object for which the present meeting had been called was a very important one; and he was happy to find from the number of influential gentlemen present, that it was so considered by them. Many were prevented by the shortness of the notice from attending, and letters had been received from George Carr Glyn, Esq., Chairman of the London and Birmingham Railway, and from Mr. Halliday, of the Chamber of Commerce, Dublin, highly approving of the objects of the meeting. The line of railway which had been approved of by the commissioners, was that which proceeded through the town of Chester, by Conway and Bangor, to Holy-

head; a line which presented remarkable facilities for laying down a railway. It was actually complete from London to Chester, and there were no engineering difficulties of any magnitude between Chester and Holyhead. Another advantage of the line was, that it would tend to the improvement of the port of Holyhead as a packet station and port of refuge; and it would also lay open the most important manufacturing districts in England, including Yorkshire and Lancashire. Sir Robert Bateson moved the first resolution, approving of the line laid down by Mr. George Stephenson, and adopted by the government commissioners, and urging that it be carried into effect as soon as possible. It was next resolved, on the motion of Captain Dundas, seconded by John Uniacke, Esq., Mayor of Chester, that an effort should be made to procure a dispensation with the standing orders of the House of Commons, to facilitate the carrying out of the recommendations of the Commissioners, otherwise the undertaking would be thrown back for two or three years. Mr. Uniacke hoped, as the present might be considered a national undertaking, that the House of Commons would suspend the standing orders with respect to the deposits of plans and serving of notices. A petition to parliament was then agreed to, for carrying out the contemplated objects, and a deputation was appointed to wait upon members of the government, in order to point out the great saving that would accrue to the country from the formation of the intended work, and to solicit their assistance in carrying it into effect. Mr. O. Stanley, M.P., Mr. J. Jarvis, Mr. P. Owen, S. E. Meyrick, Esq., Sir Wm. Somerville, and other gentlemen afterwards addressed the meeting in support of the proposed project, and, a vote of thanks having been passed to the chairman, the meeting separated.

SOUTH-EASTERLY RAILWAY.—The works of this railway, in the neighborhood of Tunbridge, are proceeding with increased activity. The Penshurst cutting, which is the principal work between the Brighton Railway and Folkestone, is carried on at a greater rate than has yet been attained on any railway in the kingdom, in order to open the line to Tunbridge in the shortest possible time. The quantity moved daily from one end of this cutting to the Medway embankment, exceeds 1,000 cubic yards. The company's property intended for the station, which is very eligibly situated at the junction of the Tunbridge Wells and Hastings roads, is undergoing the preparatory progress of levelling and draining, previous to the erection of the station buildings.—*Kentish Times.*

MANCHESTER AND LEEDS RAILWAY.—On Thursday last, we witnessed the passing of the first wagon over the viaduct at Todmorden, the first stone of which was laid on the 21st of February, 1839. It consists of nine arches, seven of which are of 60 feet span each, and two of 30 feet; and the height from the surface of the turnpike road leading to Burnley, to the level of the permanent rails, is 54 feet six inches. The viaduct is built wholly of the best stone, for which the district is celebrated.—*Manchester Times.*

KILRUSH AND KILREE.—A railroad between Kilrush and Kilree is contemplated. An estimate has been made, and it is said £3,000 will accomplish the undertaking; it is about six miles long.—*Dublin Evening Packet.*

RAILWAY COMPENSATION.—In the Sheriff's Court on Monday, a special jury was empanelled before the Under-Sheriff to assess damages in a case "The Devisee and Trustees of Marshall, deceased, v. The Eastern Counties Railway Company." The property required by the company was only an old dilapidated house estimated at £360 value; but there was this singular contingency annexed to the claim. The deceased was possessed of other freehold property of the value of £273 a year, and he had purchased this house to make a right of way to a public thoroughfare, without which his other land would be valueless. It was true he rented a road of the Weavers' Company, and paid £20 a year for it; but that was only leasehold, and might be

forfeited. The property was left to deceased's son for life (he was now very ill), and then to a Mr. and Mrs. Clarke, and their children. The company would not make a road unless they had liberty to pass across the whole property; and it was said to purchase road from Shoreditch, to which the property is contiguous, it would cost from £1,500 to £2,000. Mr. Humphrey having been heard for the plaintiffs, and Mr. Alexander, Queen's Counsel, for the company, the jury assessed the value of the house at £360, and the other contingency £540. Together, £900.

BRUSSELS.—The section of the iron railway from Brussels to Tubise was opened on Monday week. The King, the Ministers, and a great number of persons of distinction, among whom were reparked the English and French Ambassadors, were present at the ceremony, which happily passed over without any accident; but it is reported that a young man, very well dressed, who, with some of his friends, was present, suddenly exclaimed, "I am weary of life, I will get rid of it," and, with the rapidity of lightning, plunged a knife into his heart, and fell among a group of spectators.—*Brussels Paper.*

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the undermentioned places:—

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Brazils	Grenada (New)	Spain <i>via</i> Cadiz
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For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 10, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"E. M.," Cambridge.—Our correspondent's favor has been received. We have carefully examined the scientific details, and are of opinion there would not be sufficient NOVELTY to support a patent.

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INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE

INVENTORS' ADVOCATE,
AND
JOURNAL OF INDUSTRY.

SATURDAY, MAY 30, 1840.

We alluded in a recent article to the benefits to be derived from granting public rewards to useful inventions; and to the reluctance manifested by the Government to bestow rewards in such cases, even when the annual saving to the country by the invention far exceeded the amount awarded. We have this week inserted, at full, a report of what occurred in the House of Commons in reference to Mr. ROBERTS's invention for preserving anatomical subjects, as an exemplification of the difficulties and the uncertainty which at present attend any applications by inventors for public remuneration.

Without expressing any opinion on the peculiar merits of Mr. ROBERTS's claims—for let the invention have been much more generally useful, the difficulties would have been the same—it appears from this statement, that for years he was kept in a state of anxious suspense, and that communication with the government on the subject could only be obtained through the medium of one of their influential supporters. It is against this system, which makes the rewards for inventions depend rather on the extent of interest with which they can be supported, than on their intrinsic merits, that we most strongly protest. In consequence of there being no department of the government appropriated to

the examination of the numerous claims preferred, it is next to impossible that they can obtain attention; and unless any particular case is pressed on the consideration of ministers, by parties whom it is their interest to oblige, no notice is taken by the Government of improvements in the arts and manufactures, however important. The case of Mr. ROBERTS, indeed, proves that even when the means of communicating with the Government through an influential channel has been obtained, and the invention has been recommended by many testimonials from men of the greatest eminence, such is the reluctance to appropriate any of the public money for the encouragement of useful inventions, that the application is not unfrequently refused.

The House of Commons is, we regret to say, so indifferent on this important subject, that the ministers are averse to press for a reluctant vote of money for objects in which they have no personal or political interest. In one case, which came under our own knowledge some years ago, a gentleman who had claims on the Government for remuneration, the validity of which he admitted, had, nevertheless, the greatest difficulty in obtaining the reward to which it was allowed he was entitled. It was only by the most indefatigable efforts, by obtaining introductions to influential members, and by attending day and night at the Government offices, and at both Houses of Parliament, that he was, after the lapse of some years, enabled to succeed. This is a state of things that ought not to be allowed to continue. It would be infinitely better that a claimant should have a positive and speedy denial, than that he should be kept wasting his time, his substance, and his health, in the misery of "hope deferred."

Were a commission appointed, such as we before recommended, for examining the merits of new inventions and discoveries in science, the difficulties which are now insuperable to those who have no influential supporters, would be removed. Access would be attained directly to the parties who were to decide on the inventors' claims to reward, and they would then know, within a reasonable time, to what they had to trust, without wearing away the best part of their lives in vain expectations.

LOSS OF MOTION BY ROTATION.

The letters of Mr. CARSON and "R. P.", inserted last week, in reference to our articles on "centrifugal force," render it necessary

that we should return to the subject, for the purpose of answering their objections to the principles we endeavored to establish respecting the rotary motions of bodies.

The points on which Mr. CARSON, "R. P.", and we are at issue, are these:—We contend, in the first place, that the pressure outwards exerted by revolving bodies is not in the direction from the centre of curvature to the circumference, and that, in fact, there is no "centrifugal force," as that term is generally understood. The outward pressure, in our view of the matter, is produced by the deflection of the motion of the rotating body from a straight line to a curve.

In the next place, we maintain, that a rotary motion cannot be given to any body without a loss of power; which is occasioned by deflecting the rectilinear motion into a curve. The amount of this loss of power we stated to be in the ratio that a square bears to a circle described within it; that is, as 14 to 11. It follows, as a necessary consequence of this position, that a double power will not communicate a double velocity to bodies moving in curves.

In the third place, we contend that though the outward pressure of a revolving body is quadrupled by a double velocity, yet this quadruple pressure cannot be gained without a loss of power to the same extent, even when the motion is not communicated to other bodies.

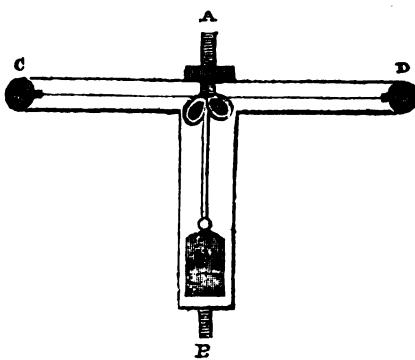
In the 33rd number of our Journal, we stated our views respecting the direction of what is termed "centrifugal force," and endeavored to show that it is a force exerted altogether at the circumferences of revolving bodies, and does not proceed directly from their centres. To these observations we have little to add; but as both our correspondents are of opinion that a force is generated by revolving bodies, distinct from the tangential force, we shall just remark, that if such a force did exist, its presence would be manifested by the direction in which bodies are thrown from the circumference of a revolving wheel. In that case, they would be propelled by the compounded forces acting in the direction of the tangent and from the centre. This, however, is not the case, for no indication of the action of a centre-flying force is perceived, and the moment the revolving body is liberated, it flies off at a tangent from the point of liberation.

The question to which we shall now more particularly direct our attention, is the loss of power by rotary motion, and the amount of such loss; because that is a question of great

practical importance, which has hitherto been but little attended to, and respecting which, we believe, very erroneous opinions generally prevail.

We take it for granted that it is an admitted law of motion, that all bodies impelled by a single force will move in straight lines, and that a moving body cannot be deflected from that course without the interference of some other force. It will also be admitted, that the resulting motion from two forces acting in different directions is less than the sum of the two forces when acting in the same direction. From these simple laws of motion, it might be deduced that a quantity of power is necessarily lost in communicating a rotary motion to bodies; but to render the fact more clear, we will prove it by a practical example.

In the annexed diagram, A B represents a hollow upright shaft, revolving on two pivots, to which shaft two hollow horizontal arms are attached.



At the end of each arm are weights, C D, which are kept in their places by strings passing over pulleys, and fastened to a large weight, W, within the hollow shaft. Let us suppose the smaller weights to be ten pounds each, and the large weight to be twenty-eight pounds. On giving a rotary motion to the upright shaft, the weights C and D would be carried round, and by their "centrifugal force" would exert an increased power, tending to raise the large weight. If by a velocity of two revolutions in a second, the weights acquired a power of one pound each, in addition to their constant weight, the effect would be the same as if an additional pound had been fastened to the end of each arm. If the velocity be doubled, the outward pressure will be quadrupled, and each of the small weights will then exert a lifting power of four pounds in addition to their constant weight of ten pounds, and will exactly counterbalance the

large weight. The effect would be the same as if four pounds had been added to each weight, and the resistance to motion, and consequently the moving power, must be increased to that extent.

The power required to give a double velocity to the whole engine would not, however, be quadrupled, as "R. P." asserts, because the gravitation of the weight fixed at the ends of the arms remains the same. For instance, supposing the power required to produce two revolutions in a second were 20, the resistance moved at the end of each arm would be $10 + 1 = 11$ lbs. To give a double velocity to the same resisting power in a straight line, would require a power of 40; but, by giving a double velocity in a circle, the resistance to be overcome is increased, and amounts to $10 + 4 = 14$ lbs. The moving power must, therefore, be increased in the same proportion.

The same fact may be shown by describing a circle within a square, and tracing, by the application of the parallelogram of forces to the circumference, the quantity of motion lost by deflection from a straight line. It will be found that the same force which would carry a body the length of one side of the square, will carry it round one quarter of the circle; and the proportion of the square to the quadrant being as 14 to 11, the quantity of motion lost by deflection from a straight line must be in the same ratio.

We have occupied so much space in answering the objections to the most important principle involved in this question, that we can scarcely afford room to notice the other parts of our correspondents' letters.

In reference to Mr. CARSON's letter, we have to observe, that we conceive the experiment of Mr. GRAHAM, on pendulums, is not applicable to the present question; as the action of gravitation on vibrating bodies is distinct from that of a constant force, and compensates for the loss of motion in the curve. We do not understand how the theory of the universe can be affected, as he appears to conceive, by our theory; on the contrary, we believe it harmonises perfectly with the laws of the solar system. On this point, however, he is himself attacked by "R. P." who observes, that if the laws of nature were regulated by Mr. CARSON's principles of motion, the world would long since have been whirled into space, without even "a comet's hope" of returning. The effect of reaction we have before considered;

and the only point that is new in Mr. CARSON's last letter, in this respect, is his plan, evidently hastily conceived, of reversing the effect of centrifugal reaction, by changing the direction of the tube from which the water is thrown out. We shall not allude further to this plan, as Mr. CARSON will, we feel assured, perceive, on reconsideration, the impossibility of such action.

Some of the objections of "R. P." are difficult to combat, as they consist of contradictory assertions. He sets out, for instance, by affirming that it is "a grievous error" to state that there is a loss of power in moving bodies in circles; yet he shortly afterwards finds fault with us for not having boldly stated that it requires quadruple power to produce a double velocity in revolving bodies. This quadruple power, he says, may be again given out; but supposing a wheel to which quadruple power had been applied, to be allowed gradually to come to rest without giving it out, what becomes of the surplus power? Is it latent in the wheel, to be given out at some future time? The example of a rolling body on a railway, adduced by "R. P." does not, we conceive, in the least assist his argument; for the loss of power which he attributes to friction, may, in our opinion, with more correctness be ascribed to the loss of motion by rotation; for, when the surfaces of smooth bodies roll over each other, *without rubbing*, there is no friction.

We have already extended the present article beyond the ordinary length, and must, therefore, conclude.

NEW INVENTIONS.

THE NEW PATENT GAS.

We have collected the following notices, that have appeared during the week in the Newspapers, and print them *verbatim*; reserving our comment on the "Invention" for some future occasion:—

THE NEW GAS VERSUS THE OLD GAS.

Pursuant to invitation, a number of literary and scientific gentlemen assembled on Saturday evening, at the St. George's workhouse, in Mount-street, Berkeley-square, to witness some further experiments on the new (patent) gas, and to exhibit the two species in juxtaposition. The *modus operandi* by which the new gas is generated, was freely shown and explained, as on the former occasion, and the time approached for commencing the experiment, when some of the practical chemists present suggested, from the smell, that the gas was not pure, but that it contained a portion of sulphured hydrogen, which would be injurious to metals and metallic colors, and some glazed cards were exposed to the gas, and were evidently discolored, and one

of the chemists having (rather strongly) expressed an unfavorable opinion of the gas, another sort of flare-up commenced, in the shape of contradiction, rejoinder, sur-rejoinder, re-butter, sur-rebutter, &c., until the smell of gunpowder had almost (*in prospectu*) displaced that of gas, and the proprietors would not allow any more testing at the lamp near the gasometer, because, as they stated, the gas had not time to cool after being made; the whole party then adjourned to Charles-street corner of John-street, 450 feet from the gasometer, where one of the new gas lamps is placed close to a common street gas lamp. Here the testing took place again, and the dissentients declared that they did not perceive the discoloration of the cards, as in the previous instance. After this, a star of six points was lighted, and produced a very brilliant light, and this closed the experiments for the evening. The quality of the light is, as we have already stated, very clear and strong, but some think it will require to be purified when intended for domestic purposes; but if it can be brought into the market at much cheaper rate than the present, or old gas, no doubt it will be encouraged by the public.

—Morning Herald.

THE NEW PATENT GAS.

On Saturday night, a repetition of an experiment with the patent gas, invented by the Count de Val Marino, was made at the St. George's workhouse, Mount-street, Berkeley-square, on the premises attached to which building a gasometer has been erected. The object of the experiment was, to produce a purer and more brilliant gas from water and tar than has yet been produced by the common method, by which the streets are illuminated, and at a price far more economical than has been yet attained, that is, at about one third or 35 per cent., cheaper than by the present plan. The experiment, on Saturday night, was as successful as could be desired, as far as steadiness of light and brilliancy could be effected; of course a mere spectator cannot speak of the amount of cost incurred, further than to repeat what the patentee asserts. At the corner of John-street and South-street, Berkeley-square, there were three lamp posts with lamps and gas burners; one of these is the original gas lamp, the other two were placed there for the exhibition of the experiment; one of these had a glass chimney round the gas, similar to those used for *Sinumbras* lamps, it was a great improvement by keeping the flame steady, and preventing the flickering caused by the wind, and might be advantageously applied to any external gas burner at but small expense. The other experimental burner was without the chimney, so that a fair estimate might be made of its powers in contrast with its neighbor of the old system. It certainly lost nothing by the comparison, but burnt clearly and resplendently. There was an illuminated star at the back of the workhouse, which was very bright, but the three lamps in John-street and South-street afforded the best criterion of their respective merits. A good many persons were present as spectators, most of whom expressed themselves highly satisfied with the results of the experiment.—Times.

THE NEW PATENT GAS-LIGHT.

[From the Sun.]

We, on Saturday evening last, witnessed the exhibition of Count de Val Marino's valuable invention in the grounds of the Workhouse, in Mount-street, Berkeley-square, made in the presence of several noble and scientific gentlemen. The object in view is to produce from water and tar a more brilliant and pure gas, at less cost, than that at present supplied to the public. As regards the brilliancy and illuminating power, we are fully convinced of its superiority. It produces a pure white flame, free from all smoke, which was tested by a large star burning in the open ground, and the usual burners in-doors.

Among the company present, who were highly

gratified, we observed the Turkish Ambassador, Lord Lowther, Hon. Mr. Byng, Dr. Costello, Mr. Maugham, Mr. Cooper, and many gentlemen connected with the gas companies.

The following is a testimonial of the opinion of Mr. Maugham, the celebrated lecturer of the Adelaide Gallery:—

"I have this day witnessed the combustion of the gas made on Count de Val Marino's principle, and I have no hesitation in stating that this gas is possessed of a very brilliant illuminating power, and that the process of manufacturing it is calculated to turn to a valuable account an article which at present is scarcely marketable, selling as low as one penny per gallon. As the coal tar can thus be turned to account, it certainly is a matter of consideration with the gas companies, whether the tar produced by the distillation of coal may not be rendered more valuable by converting it into gas on Count de Val Marino's principle, than selling it, as at present, at the above-named price."

"I wish it to be understood that I am quite favorable to the introduction of this gas, because some misunderstanding took place during the exhibition of the gas; and it was thought by many persons present that I wished to depreciate the value of the invention, which was not the case."

W. MAUGHAM.

May 28th, 1840."

NEW PATENT GAS.

We were on Saturday evening admitted to witness an experiment on the new patent gas, at St. George's Workhouse, Mount-street, Berkeley-square. The process of obtaining this gas is from the decomposition of tar, and it has been the subject of numerous experiments by various parties in this country as well as on the Continent. Some of the gas companies in the metropolis have expended much time and capital in attempting to obtain gas from their refuse coal tar, and have succeeded in doing so in a chemical point of view, but have given it up as a practical process in consequence of the expense exceeding that of obtaining gas directly from coal. We are not aware of the peculiar points of difference between former experiments and that we witnessed on Saturday. The gas in this case, is obtained from three retorts, that are placed vertically on the fire; into one of these, tar is dropped, and said to be decomposed; into the second water is dropped, and also said to be decomposed, the hydrogen passing off into the third retort, where it is met by the vapor or gaseous matters coming from the first or tar retort. What becomes of the oxygen, the other element of water, we could not ascertain. The light produced was good, but not visibly different from common coal gas. We did not understand that any experiments have been made to determine its comparative illuminating power, or to obtain data of expense, points which it is most desirable should be determined. Artificial light is a subject of the highest importance, and we shall be glad to see the results of some well-arranged photometrical experiments to determine the practical value of this process.

Morning Chronicle.

We quite agree with the last writer that the data of expense should be ascertained, in the first instance. It is quite possible to obtain a strong illuminating power, we are aware; but if the process of obtaining it be more expensive than that previously in use, wherein we would ask, consists the practical value of the new discovery?

THE NEW ANTISEPTIC PROCESS.

PETITION OF MR. ROBERTS.—On Thursday, the 21st inst., in the House of Commons, Mr. F. French called the attention of the house to the petition of Mr. Roberts, which had been presented on the 3d of April, and which related to a subject of much importance in an anatomical point of view. The

petitioner had discovered an antiseptic process, by which animal substances could be preserved from putrefaction, and to the value of that discovery some of the ablest surgeons and anatomical teachers in the metropolis had borne testimony. Those gentlemen, in a letter which he held in his hand, stated that they were convinced, from what they had seen, that Mr. Roberts' preparation was capable of keeping in a fresh, moist, and inoffensive state, the flesh of animals, and they thought that it might become of important use to surgeons and students of anatomy, and that it might be made to promote materially the objects of the Anatomy Bill. That letter was signed by Sir A. Cooper, Sir C. Brodie, Mr. Green, and other gentlemen of high standing in the medical profession. There was another letter to the same effect from Dr. Somerville, who stated that he owed it to Mr. Roberts, not less than to the medical profession, to bear his testimony to the merits of the process, by which portions of the human body had been preserved for a period exceeding six weeks. Those gentlemen, and many others, had expressed themselves in the most decided terms as to the merits of this discovery, and they had suggested to Mr. Roberts that the hon. member for Bridport, from his connexion with the Anatomy Bill, and from the influence which he possessed with Government, was the best person to whom he could apply in order to have the process adopted generally in the anatomical schools, and in a manner the best calculated to remunerate the discoverer. Sir A. Cooper had accordingly given Mr. Roberts a letter of introduction to Mr. Warburton, and Mr. Warburton had in consequence offered to enter into negotiation with the Government on the subject. In his interview with that gentleman, Mr. Roberts was asked by Mr. Warburton what the value was which he put upon this discovery, and Mr. Roberts replied that he would accept of £5,000 for a license to enable the whole schools of anatomy in the kingdom to make use of the process. Some time afterwards, Mr. Warburton stated to Mr. Roberts that the Chancellor of the Exchequer, to whom he had applied, could not give his attention to the matter, on account of the pressure of public business, till the end of the session of 1836. About that period, however, the Chancellor left town suddenly to attend the British Association at Bristol, and from that place he proceeded to Ireland. Dr. Birkbeck had also written to Mr. Rice upon the subject, but to that letter no answer had been received. About the 22d of September, however, Mr. Warburton received a letter from Mr. Rice (now Lord Monteagle), enclosing a letter from the Home-office, in which the receipt of Dr. Birkbeck's application was acknowledged, and in which Lord John Russell admitted the importance and utility of the process, but stated that he did not feel himself warranted in recommending that the Government should pay to Mr. Roberts the sum of £5,000 for its use in the anatomical schools. Now, before he proceeded further, he felt bound to say that he had no charge to make against the Home-office, for the course which had been pursued by that department had been perfectly straight-forward. On hearing the contents of the letter which had been written by the direction of Lord John Russell, Mr. Roberts concluded that the negotiation with the Government was at an end, and he proposed, in consequence, to enter personally into an arrangement with the different anatomical schools, so as to enable them to make use of the process which he had discovered. On stating his intention to do so, to Mr. Warburton, that gentleman said "No. The letter received from Lord John Russell admits the value and importance of your discovery, and as the letter is sent to me instead of Dr. Birkbeck, it is evident that the Chancellor of the Exchequer wishes the negotiation to be continued through me." The hon. gentleman, the member for Bridport, had however added, that it was necessary for Mr. Roberts to put him confidentially in possession of the secret of the process, when he would make some experiments to test its efficacy, and then report to the Chancellor of the Exchequer upon the subject. With that request

Mr. Roberts hesitated to comply, but the hon. member for Bridport stated, that until he was made acquainted with the process he would not advance a step in the matter. However, on the recommendation of George Sinclair, the member for Caithness, Mr. Roberts at last consented to put Mr. Warburton in possession of the secret, and as soon as he had done so, Mr. Warburton communicated the fact to the Chancellor of the Exchequer, but for two years, no report had been made. This was in April, 1837, and he believed that till the end of the year no experiment had been made as to the value of the process which had been submitted to the hon. member. About the end of the year 1837, Mr. Roberts saw by advertisements in the public papers, that two persons had taken out patents for processes similar to his own, and, becoming alarmed at the delay which had taken place in determining the merits of his own discovery, he applied once more to Mr. Warburton upon the subject. To that application the honorable member for Bridport had replied, that Mr. Roberts might make himself perfectly easy, because, as the Government had directed him to make a report on the merits of his discovery, Ministers would be obliged to remunerate him for disclosing the process, even should twenty patents for similar processes be taken out. Further time, however, elapsed without any communication being made to Mr. Roberts, and that gentleman, weary of the delay, again applied to Sir George Sinclair upon the subject. On the 2d of February, 1838, Mr. Roberts received an answer to that application, in which Sir George Sinclair said, "Mr. Warburton thinks so highly of your invention that he is willing to recommend that Government should pay you £1,000 for revealing the process, and a further sum, say £2,000 more, if on trial it should meet with general approbation and adoption." Nothing, however, was done for a considerable time longer, and it was only on the 9th of April, 1838, that Mr. Roberts received a letter from Mr. Warburton, in which was the following passage—"I am sorry to inform you that I have received a letter from the Home-office, stating that the Chancellor of the Exchequer having referred to that office the question of remunerating you for your discovery of a method of preserving animal substances from putrefaction, Lord J. Russell has declined recommending a grant of public money for that purpose." Now, he would ask whether such proceedings would be tolerated in private life, and if they could not be justified in private life, how could they be justifiable in a Government? Was it fair to ask this gentleman to disclose his secret, and to appoint a person to report upon the merits of his discovery, and yet, and after such a delay as had taken place, to refuse him any remuneration for his invention? He thought this was a case which called loudly for inquiry, and he hoped the house would consent to an investigation of the allegations contained in the petition. He should conclude by moving that a committee of inquiry be appointed to inquire into the subject.

Mr. C. Lushington seconded the motion.

Mr. Warburton thought it would have been only fair if the hon. member who had brought forward this subject had applied to him in the first place, and before submitting this motion to the house. Had he done so, the hon. gentleman would have received the fullest explanation of all the circumstances to which he had adverted; but as he had thought proper to pursue a different course, and without any intimation, had made a statement on the subject to the house, he (Mr. Warburton) felt he had some cause to complain of the manner in which he had been treated. Mr. Roberts had come to him, and had shown him letters from some of the most respectable members of the medical profession in favor of his discovery, and had asked him to bring his invention under the notice of the Government. To that request he had replied, that he was no judge of the merits of the process, but that the great question to be considered was, in his opinion, whether it was economical and easy in its application. He had also stated to Mr. Roberts,

that he was willing to see the Chancellor of the Exchequer upon the subject, and he had said he would recommend the Chancellor to make him a small grant in the first place, and a larger one afterwards, should the discovery prove effectual. While, however, the matter was under the consideration of the Chancellor, information of this kind reached his ears. In the minutes of the Anatomical Association he found it stated, on the 12th of March, 1837—"Dr. Somerville mentioned at a meeting of the committee, that Mr. Roberts had expressed his determination, unless the governors advised the use of his antiseptic fluid, to obstruct the distribution of bodies to the anatomical schools." On obtaining information, the next time Mr. Roberts called upon him he told him he could have nothing further to do with the process, and had wished him good morning. Sir George Sinclair had, however, prevailed upon him to overlook this offence, great as he considered it to be, and at the request of that hon. baronet he consented to go to the Chancellor again. He, however, told Mr. Roberts that he would not again see the Chancellor unless he was made acquainted confidentially with the nature of the process, in order that he might be more fully able to judge of its merits. In consequence of that determination, Mr. Roberts had disclosed the secret of the process to Sir George Sinclair and to himself, and after making some experiments, he had made a new recommendation to the Chancellor of the Exchequer in favor of Mr. Roberts. He begged distinctly to be understood, however, that there had been no contract, and merely a recommendation. When he had made his report, the Chancellor of the Exchequer referred the matter to the Home-office, and Lord J. Russell declined to make any grant of the public money to Mr. Roberts. In 1838 Mr. Roberts proceeded to carry his threat into effect, upon the application being rejected by the Home-office. He distributed written papers at all the workhouses in London, and endeavored to excite a prejudice in the public mind. Was this a man who could put in a claim to a reward out of the public money?

Mr. Hawes said, that in answer to an application from Mr. Roberts, he referred that gentleman to a committee of inquiry which was then sitting at the House of Commons. Before that committee, however, Mr. Roberts never chose to appear.

Mr. Goulburn thought that, if this were really a valuable discovery, since from its nature it was not entitled to receive a patent, the individual was entitled to some remuneration at the hands of the public.

Mr. F. Mauls was of opinion that there should be the greatest delicacy on the part of Government in treating applications of this nature, when great discoveries often turned out to be great failures. He was happy to state that the Anatomy Act had been completely successful, and that not a single case of what was termed "resurrection" now occurred.

Sir R. H. Inglis said, that this was a question, not of remuneration, but of inquiry.

After a few words from Mr. Payne and Mr. Warburton,

Mr. F. Faure said, that as he saw no chance of carrying his motion, he would now by leave withdraw it.

The motion was then by leave withdrawn.

PATENT THEATRE MACHINERY.

The machinery for working the scenes, drops, wings, and other portions of the scenic contrivances of theatres, designed by Mr. R. Macdonald Stephenson, of which a notice was given by us about 18 months ago, when a model was exhibited by the inventor in Thames-street, has been erected in the new theatre of Miss Kelly, in Dean street, Soho. What we said of the model, we can repeat of the actual machinery in its enlarged state. The machinery consists of teeth-wheels, fastened to the ends of horizontal and vertical bars or strong rods of iron, which are put in motion by means of windlasses worked by hand. The details

of the machinery are simple, yet elaborate, and are so arranged that the whole works with great precision and truth, with little or no noise, and a vast saving of labor. The whole of the scenery, the traps, and indeed the whole stage itself, is worked at the theatre in Dean-street on this principle. The stage is capable of being sunk many feet below the platform of the foot-lights, and elevated to its usual position, with ease and security. For the working of the scenes, four men are sufficient, so that by the introduction of this method, which is very ingenious, the stage can be kept clear for the dramatic personæ, and a vast deal of the confusion and noise, which is almost unavoidable behind the scenes of theatres in which the old plan is pursued, is got rid of. The whole arrangement is excellent, and is an immense improvement on the system usually adopted.—*Times*.

GALVANIC-ELECTROTYPE AND DAGUERREOTYPE.

Dr. Simon, of Dover, has just succeeded in reversing the image obtained by the Daguerreian process which is known to re-produce the objects from nature in a contrary sense, viz., the left tower of a castle will be the right, and the right the left, on the drawing, which imperfection, however, can be obviated by parallel glasses, a new improvement in the Daguerreotype, by M. Lerebourg, of Paris. Dr. Simon has contrived a new galvanic trough, which he calls "Simon's Galvanic-Electric Plastic Battery." It is exceedingly portable, and most effectual, and has by the galvanic electrotype discovery re-obtained and fixed on a most beautifully polished surface of copper the view of Dover Castle, and reproduced in its right sense. This new and beautiful discovery will, no doubt, attract the attention of the lovers and admirers of science, and of the fine arts. The science is only in its infancy, and promises the happiest results.—*Dover Chronicle*.

VARIETIES.

The Great Western.—The Great Western, which arrived at Bristol on Saturday evening, left New York on the afternoon of the 9th inst., in a heavy gale of wind at east, dead against her, which lasted, without intermission, two days. On her outward passage, after the first three days, she experienced strong contrary breezes, at times amounting to gales, which lengthened her passage to seventeen and a-half days. She was full of passengers and freight, and has brought about 300,000 dollars on merchants' account. Her berths for the next voyage to New York, on 4th June, are fast filling, and there is very little doubt that she will have her full complement of passengers.

Fraudulent "Company."—*Paris.*—The tribunal of correctional police of Paris, has just pronounced sentence in an affair which has been for several days before it. A person named Justin, and five others, named Corbin, Mané, Chevallier, Leberte, and Ribot, were charged with having got up a company under the title of "Coal Mines of the Rive de Gier," and defrauding the shareholders by false representations as to the value of the mines. It appeared from the evidence, that Justin, who had purchased the mines for 94,000 francs, and charged 500,000 francs to the company, had described them as containing 10,000,000 of hectolitres of coal, whereas they were nearly exhausted; and he had been guilty of other fraudulent representations. Mané, one of the other defendants, was the nominal gérant, but it did not appear that he had been other than a blind instrument of Justin. As regarded the other four defendants, who were the banker, notary, and agents of the company, it was shown that, although they might have acted with singular indiscretion, and been influenced by hopes of pecuniary advantage, they were not parties to the fraud of Justin. They were, therefore, acquitted, but in delivering its sentence, the tribunal did not fail to remark, with some severity, upon the conduct of M. Corbin, who,

by mixing himself up so intimately with the affair, had violated his duties as a notary. Justin was sentenced to two years' imprisonment, £200 fine, and the costs of the whole proceedings.

Substitutes for Hemp.—The African Bow String Hemp has been proposed as a substitute for the *Phormium tenax*, or New Zealand flax, and its fibre is stated to be of nearly an equally good quality. This is confirmed by the nearly allied Indian species of *Sansevieria*;—S. Roxburghiana, S. Moorva, &c.; yielding it of a fine and at the same time of very strong quality, fitted for bow-strings, fishing-lines, as well as for cordage, which indeed is made from it on the Coromandel coast. Dr. Roxburgh is of opinion that the fine fibres called China grass are made from this plant, and Mr. Greenlaw, Secretary to the Marine Board, (India) states that it is proposed to try the fibre of S. Roxburghiana on a large scale for ropes.—*Prof. Royle's Botany of the Himalayan Mountains.*

Population of Brussels.—The amount of the population of Brussels on the 1st of January, 1840, according to the census which has just been taken, was 106,144, without including the suburbs. On the 1st of January, 1830, the census amounted to 98,279; thus, during this period of ten years, there has been an increase of 7,863. It would, without doubt, have been much more considerable, had it not been for the great mortality occasioned by the cholera. On comparing the census of the population on the 1st of January, 1839, (104,718) with the present one, it appears that there has been an increase during the last year of 1,431.

Economical Burying Company.—An association is forming at Paris on the plan of those in America, for the purpose of diminishing the costs of funerals. All members of the association engage, that in the funerals of their families only one plain coach shall be used, and that the amount saved by this means shall be appropriated to charitable uses.

An Ante-Diluvian Child.—A fossil skeleton of a child between five and six months' old, has been found in a quarry near Brussels. The bones were converted into silex, which struck fire with steel. The head, shoulders, throat, and belly were perfect, and the neck exhibited evident traces of muscles. A fossil cocoa nut, quite perfect, was found by the side of the child.

WRECK OF THE ROYAL GEORGE.

The operations have been continued daily, with great activity and success, two divers being employed every slack tide in slingling the fragments of the wreck, which gives employment to about eighty men, sappers and miners, riggers, and naval pensioners, who get them up, and put them on board the Lively lighter, which has been in constant attendance, and carried these interesting remains into the dock-yard, where an immense pile of timber, thus recovered, has been deposited, nearly opposite to the superintendent's office, attracting a number of spectators. Since the great explosion of the 11th instant, the weather has been very favorable, excepting on the afternoon of Friday the 15th, when the work was necessarily suspended. The stern post has been got up, broken into three pieces by that explosion, together with a large fragment of dead wood, that stood immediately over and above the keel, and was also connected with the stern-post. A very curious mass, consisting of part of the lower deck, with a portion of beam, and two knees below the deck-plank, and a rider, or upright knee above it, together with part of a port, and the remaining both of the inside and outside planking on each side of a fragment of a timber, may now be seen in the dock-yard. A very large cable has also been got up, measuring 24 inches round, and about 90 fathoms in length, which was generally very sound, but has been broken into several pieces, so that the diver had to

descend repeatedly for two days, before he slung the whole of it. It was laid open by a small charge of about 45 lbs. of powder, which broke up a lower deck beam above it, and at the same time made a crater in the mud below, which enabled the diver, on his next descent, to discover this interesting relic. All is clear now above the orlop deck, except some beams of the lower deck, which still remain. This day (Saturday) red flags were hoisted on board the two lumps, at 10 o'clock, as a signal that two explosions of 250 lbs. of powder each, would take place at the next slack tide, and two divers were sent down, John Fullagar, from No. 4, and George Hall, from No. 2, lumps; to make preparations for placing the two charges, one under the main hatchway of the orlop deck, the other near the bread-room. Lieut. Symonds, the executive engineer, who made all the arrangements on this occasion, as well as for the great explosion of the 11th, with much skill, then sent down the charges, with the divers, who reported that they were well placed, and having removed the lumps to a little distance, he posted himself at one voltaic battery, whilst Serjeant Major Jones had charge of the other. Col. Pasley then gave the word to fire, but only one explosion took place, which was effected by four cells of Professor Daniell's battery, at the distance of 240 feet. This produced the usual effect of a great commotion in the water, in the form of an inverted bowl, spreading to a considerable distance, but not rising any great height, several seconds elapsing after a sharp shock was felt, before this agitation of the water took place. The second explosion, which was to have been fired by means of Mr. Alfred Smee's voltaic battery, did not take place on completing the circuit; but Serjeant-Major Jones, feeling the shock of the other explosion, believed it to be his own, for he completed the voltaic circuit, on first receiving the order to fire. Being ordered to complete the circuit a second time he did so, and upon keeping up the contact for about four seconds, the explosion was effected at a distance of 460 feet. The battery was in a Woolaston's porcelain trough of 14 cells, with plates five inches square. This was the first time that Mr. Smee's battery had been used in the operations of the Royal George, and if it had been used by persons of more experience, the contact ought to have been preserved longer, as this battery which has great advantages, and said to be more powerful than Daniell's when an equal surface of metal is exposed, hangs fire as it were for some seconds; whereas, the ignition of gunpowder by Daniell's battery is instantaneous, that is, when a sufficient number of cells are used. After these explosions, which were witnessed by Admirals Sir Edward Codrington and Bouverie, Major-General Sir Hercules Pakenham, and a number of officers of both services, and numerous other spectators, the divers repeatedly went down again, and lashed large pieces of timber, amongst which we observed the parts of a lower-deck beam. A human skull, with teeth, was also brought up from the after-part of the wreck, which Colonel Pasley has declared his intention to bury in Kingston-churchyard, together with such other remains of skeletons as may be obtained hereafter.—*Hampshire Telegraph.*

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING JUNE 1ST, 1840.

Monday.	Entomological Society.....	8 P. M.
	British Architects.....	8 P. M.
Tuesday.	United Service Institution....	9 P. M.
	Linnaean Society.....	8 P. M.
	Horticultural Society.....	3 P. M.
	Instit. of Civil Engineers....	8 P. M.
	Electrical Society.....	8 P. M.
	Architectural Society.....	8 P. M.
Wednesday.	Society of Arts.....	7 P. M.
Thursday.	Royal Society.....	8½ P. M.
	Royal Society of Antiquaries..	8 P. M.
	Zoological Society.....	3 P. M.
Friday.	Royal Institution.....	8½ P. M.
	Botanical Society.....	8 P. M.
Saturday.	Mathematical Society.....	8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

SOCIETY OF ANTIQUARIES.

May 19th. Lord Aberdeen, President, in the chair.

While the ordinary business of the evening was being carried on, the President rose and proposed a suspension of the proceedings until the arrival of his Royal Highness Prince Albert, who intended that evening honoring the society with his presence. After a considerable delay the prince, together with his suite, entered the room, and was conducted by the secretaries (Sir H. Ellis and Mr. Carlisle) to a seat placed at the head of the table on the right of the president's chair. Lord Aberdeen then addressed the society, and said he was gratified in announcing that his royal highness was present for the purpose of enrolling himself a fellow of the society. This declaration was received with cheers by the very crowded assembly. The prince then subscribed his name in the book containing the names of the fellows of the society; among which are the autographs of the royal patrons of the present and past generations. The business of the evening was then resumed by the reading of an interesting communication from John Gage Rokewoode, Esq., the director, on recent discoveries in the tumuli on the Bartlow Hills, which the writer proved to have been the burial places of persons of note or distinction during the Roman dynasty. His royal highness seemed highly interested, and minutely examined the beautiful specimens of glass, bronze, and terra cotta vessels, and other works of ancient art, which were placed on the table in illustration of Mr. Rokewoode's paper.

ROYAL INSTITUTION.

May 15th. Friday Evening Meeting.

Mr. Macilwain delivered a lecture "On Respiration, and its relation to animal temperature." The lecturer commenced by stating a few remarks on the atmosphere, as regards its relation to the animal creation. The different varieties of animals and vegetables have the power of taking up matter and converting it into their own substance: this is termed assimilation. The process of digestion was then popularly explained; the food after entering the mouth is divided and mixed with the saliva into an uniform mass, which is by the action of the tongue thrown into a funnel-shaped bag at the back of the mouth (pharynx), and is urged on to the gullet and stomach by two sets of muscular fibres, which encircle these organs. In the stomach the gastric juice acts upon the mass, converting it into chyme and chyle; the latter, the nutritious portion, is taken up by numerous absorbent vessels thickly studding the inner surface of the small intestines; these vessels confluence, and form ultimately the thoracic duct. The chyle conveyed by this duct is emptied into veins, and reaches the heart with the impure or venous blood; it is then distributed to all the divisions of the air tubes in the lungs, is there purified, and returned to the heart, to be propelled by means of that organ to every part of the body.

Mr. M. then explained the mechanical, chemical, and physiological relations of respiration. During respiration, the oxygen of the atmospheric air disappears, combines in the lungs with the carbon of the venous blood, and is expelled in the form of carbonic acid. In man, and the higher animals, the lungs are, popularly speaking, complicated sacs; in the lower animals they are mere sacs. A pair of sheep's lungs were inflated with a view to show the difference in bulk as compared with them in the collapsed state; and the lecturer stated that the audience had only to imagine this inflation to take place from 14 to 20 times in a minute, and at the same time the heart to beat about 72 times in the same space of time, they would then have an idea of what takes place within the chest in health in the space

of 60 seconds. One of the results of the chemical effects of respiration, is the striking power evinced in warm-blooded animals, as man, &c., of preserving an uniform temperature under a variety of differences in the surrounding atmosphere. This effect is peculiar to animals with warm blood. Vegetables, however, possess the same property. Allusion was here made to the experiments of John Hunter, who investigated this subject, and produced tables of comparison between animals and plants. The temperature of cold and warm blooded animals was alluded to as given by Tiedemann. The following are copied from the table: ox, 90 degrees; sheep, 100; horse, 97; elephant, 99; squirrel, 100; guinea pig, 96; hare, 100; rabbit, 99; seal, 102; ape, 103; pigeon, 106; fringilla, 107; great titmouse, 111.

With regard to the source of animal heat, Mr. M. does not consider it altogether proved that the evolution of animal heat takes place by the conversion of venous (or dark) blood in the lungs into arterial (or florid) blood. Scarcely half the blood of the frog is acted upon by the lungs, and it would be said, this animal is of the cold blooded group. But among warm blooded animals, such as bears, beavers, &c., during hibernation they are in a torpid state. Many curious facts were adduced in connection with hibernation; the *Tanrec*, for example, of Madagascar, and other animals, hibernate in hot weather; if they had not this power they must inevitably starve as their food disappears. Many reptiles become torpid in hot weather, and snails in both hot and cold weather; in cold weather, respiration ceases in the latter.

Mr. M. is of opinion that the skin exercises a great influence, together with the lungs, in the production of animal heat; in proof of which he instanced the breathing of the frog. In this animal the lungs are large; it breathes, however, considerably by the skin, throwing off carbonic acid; the frog will breathe without the lungs, but not without the skin. If this animal is subjected to a temperature of 56 or 57 degrees in water, it will not breathe without it has access to air. Some animals breathe by gills (branchia) and by lungs also; these are usually found in warm and moist situations. Moisture was considered as a great impediment to cutaneous perspiration; and it was stated as the opinion of Edwards that in perfectly dry and in moist air the difference is six to one in favor of the dry air. Fish, although cold blooded animals, do not breathe like frogs; they are generally considered very limited breathers, owing to the menstruum by which they are surrounded. Mr. M. is inclined, however, to doubt the latter assertion. The gills of the mackerel were exhibited with a view to point out the extent of respiratory surface in fish. It was stated that fish breathe an air containing more than one-third per cent of oxygen (vital air), while but one-fifth is contained in the atmosphere serving for the support of those animals which breathe it. The hibernation of insects was alluded to in connection with their highly developed breathing apparatus; in fact they are nearly all lung, and yet they are classed among cold blooded tribes. Mr. M. thinks this is a proof that the lungs are not altogether the generators of heat. The experiments of Mr. Brodie were mentioned, in which, after the division of the spinal chord, by keeping up artificial respiration, the change of the blood took place in the lungs, but no heat was evolved; these experiments, however, have been repeated with very different results by others. The quantity of heat given off by the skin and lungs was explained, and the influence of temperature on respiration alluded to.—cold diminishing respiration, but slow respiration does not produce cold. Mr. Macilwain then stated as his opinion, that, in the production of animal heat, the skin, together with the lungs, should be considered, for in fever, when the skin is hot and dry, the temperature of the body is much increased. Other facts were adduced, to which the lecturer merely alluded; not considering the grounds, however, to be sufficient at the present time to establish it as a fact; stating, at the same time, that the subject affords ample scope for investigation.

Mr. Faraday exhibited a shot, which had been

forwarded by the commandant at Woolwich, the outer case of which was made of cast iron and filled with lead. It was stated, that from trials made at Deal, during last year, where an ordinary cannon shot entered the butt 14 feet; this, with the same quantity of powder, and fired from the same or a similar gun, entered 26 feet. A hollow ball was also shown, which had been filled with leaden bullets, after the shot had been discharged the shot was broken, these bullets were found to be consolidated into a mass, which might be separated, each having a polygonal form.

On the library table we observed the following articles:—The model of a gas-work, from Mr. Griffiths; a Daguerreotype picture of Van Bro' Castle, Blackheath, by Mr. John Cooper; copper coins shot through with bullets and large shot; portraits taken from the life by the Daguerreotype, and views of Paris.

A lecture on "White-lead," by Mr. Brander, was announced for the following Friday.

MICROSCOPICAL SOCIETY.

May 20th. Professor Owen, F.R.S., President, in the Chair.

The following gentlemen were admitted members:—H. Price, Capt. J. Fow, C. Smith, J. Griffith, H. Martin, J. J. Shury, F. Dixon, E. Newman, and J. Hodgson. Four recommendations for election were read. A paper was read by Mr. Dalrymple, being "Remarks on the family of *Clasterium*." The object of the communication was to offer a few observations upon the organisation of this most disputed class of beings, and to show the extreme difficulty that exists in satisfactorily arranging whether this group belongs to the animal or vegetable kingdom. After entering into various elaborate and interesting details connected with the true structure and nature of these bodies so low in the scale of organisation, which the author is inclined to consider of animal structure, the author sums up his communication thus:—

From this mass of conflicting observations and opinions, it remains for me to state the ground upon which I presume to retain *Clasterium* on the side of the animal kingdom; confessing at the same time the imperfection of my own observations, and the incompleteness of many of the points connected with the multiplication of the species.

1st. That while *Clasterium* has a circulation of molecules greatly resembling that of plants, it has also a definite organ, unknown in any of the vegetable world, in which these molecules appear to enjoy an independent motion, and the paroxysms of which appear capable of contracting upon their constituents.

2dly. That the green gelatinous body is contained in a membranous envelope, which while it is elastic, (a property common to animal and vegetable bodies,) contracts also upon the application of certain reagents, whose effects cannot be considered wholly chemical. Tincture of iodine in very small proportion, mingled with the water in which they reside, not only produces speedy death, but this death is accompanied by a singular and violent contraction of the membranous envelope, which, by compressing the green pulp, ultimately bursts, at the same time forcing the transparent juices of the animal into the terminal sacs, producing dilatation and rupture of them, with the escape of their active molecules.

3dly. The comparison of the supposed ova with cyto-blasts and cells of vegetables, precludes the probability of our considering them as the latter, while the appearance of a vitelline nucleus, transparent but molecular fluid, and a chorion or shell, determines them to be animal ova. The siliceous shell being entire, renders it improbable that they should be the ova of such infusoria as sometimes deposit their eggs in empty and separated dead shells; while the green pulp left in the centre, shows that the animal is either yet alive, or but very recently dead: these ova are also on too large a scale to be

considered as belonging to any entozoon of *Clasterium*.

4th. While I hold it to be impossible to determine whether the vague movements of the animals are voluntary or not, yet, the idea I have formed of a suctorial apparatus at the extremities of the horns, forbids my classing them with plants, although this point of the minute anatomy of *Clasterium* demands further careful investigation.

Lastly, in no instance within my observation has iodine produced its ordinary effects on starch in coloring the green pulp purple or violet, which, had it so acted, would have proved this matter to be a true vegetable product: these experiments, however, are altogether at variance with the observations of Meyen.

A discussion ensued, in which Mr. Varley, and others, took part. The paper was illustrated by a beautiful series of drawings. The President exhibited some microscopic objects from M. Agassiz, being the froth or scum of a lake, near Neuf-Chatel, in Switzerland, which contained the siliceous cases of many infusoria; he thought this might go a great way to prove the formation of many rocks which extend for miles in length, and 16 feet in depth, such as Tripoli, and which Ehrenberg has found to be composed entirely of the siliceous cases of these minute and low animals. Several gentlemen attended with their microscopes, and exhibited a variety of interesting and novel objects, both illustrating the paper and those forwarded by M. Agassiz, &c. The society then adjourned until 24th of June.

URANIAN SOCIETY.

May 19. W. H. White, Esq., Vice President, in the Chair.

James Utting, Esq., of Lynn Regis, Norfolk, was elected a corresponding member.

A paper, on the earth considered as a celestial body, was read, wherein it was shown that the various changes which our globe undergoes, are entirely owing to its motions as a planet; and that all productions, animal, vegetable, &c., are the necessary results of a planet, located and circumstanced as the earth is. That since the same law governs all planetary action, each planet of our system must be subjected to similar mutations to those of the earth, and be alike productive of existences for which the immutable law of necessity has adapted it.

The meeting then adjourned to June 2d. The Chairman announced that the future meetings would be held at their new apartments, No. 20, Bedford Street, Covent Garden.

THE THEATRES.

"See that the players be well used."—*Hamlet*.

"Nothing extenuate, nor aught set down in malice."—*Othello*.

HER MAJESTY'S THEATRE.—*Otello* was repeated on Saturday evening, to a full and fashionable audience; in fact, after five o'clock there was not an admission to be obtained at any price. RUBINI, as usual, astonished the audience by the boldness and impassioned energy of his manner, and the wonderful variation of his voice, which, at one moment, was full and sonorous,—the next, rising in the air like a lark, and then again descending and exploding with a fresh impetus. Madaine Grisi was not so effective as usual, she appeared to be suffering from the effects of a damp atmosphere, so fatal to singers. Touching LABLACHE's performance, we can only reiterate the warmth of our former praise. The same observation will apply to TANZURINI. The ballet of *Le Lac des Fees* went off with, if possible, increased effect. Mdile. CARITO bounded along with her usual elasticity.

and grace, in a series of evolutions as original as they were wonderful.

HAYMARKET.—Mr. Serjeant TALFOURD's new tragedy, entitled *Glencoe, or the Fate of the Macdonalds*, was produced on Saturday, and met with moderate success. The first three acts were performed without exciting any marked applause, and indeed we saw nothing in them to call for any such demonstration. They were heavy, dull, and pointless; a task to be got through, and a relief when the task was over. The melo-dramatic situations in the fourth and fifth acts, roused the public from their apathy, and the *dénouement* of the tragedy put them into good humor.

The scene of this "historical tragedy" is laid in Glencoe, and on the banks of Loch Leven, at the beginning of the year 1689, about the time of the submission of the last clan-chief-adherents of the ruined James to William, the English King.

In the preface, the author observes of his task:—"In endeavoring to present in a dramatic form, the feelings which the scene and its history have endangered, it has been found necessary to place in the foreground domestic incidents and fictitious characters." He continues—"The rash irresolution of *Mac Ian*, in deferring his submission till the last moment; his journey to Fort William in the snow storm; his disappointment in finding he had sought the wrong officer; his turning thence, and passing near his own house, to Inverary, where he arrived after the appointed day; the acceptance of his oath by the Sheriff of Argyle, and his return to enforce the allegiance of his clan to King William; the arrival of *Glenlyon* and his soldiers in the glen; their entertainment for 15 days by the *Macdonalds*; the cold hypocrisy by which they veiled their purpose when urged to its execution by *Major Duncanson*, and the partial execution of the murderous orders, are all real features of 'an ower tru tale.' The only deviations of which the author is conscious are, the representing *Alaster Macdonald*, the younger son of *Mac Ian*, as a lad, instead of the husband of *Glenlyon's* niece, and that niece (*Helen Campbell*), as fostered by the widow and son of a chief of the clan, once the rival of *Mac Ian*; and in substituting for the foul traits of treachery which Sir Walter Scott imputes to *Glenlyon*, the incident of his procuring a young officer in his own regiment, but of the clan of the *Macdonalds*, to place the soldiers in the tracks leading from the valley they were commanded to surround. The character of *Halbert Macdonald*, and the incidents of his story and conduct, are entirely fictitious."

We need only add to the above, that the hopeless affection of *Halbert* for *Helen*, with the acts of magnanimity and patriotism of the lover, supplies the theme for the dramatic poet. It is to be regretted, that the author should have written this play for one actor only, *MACREADY*. It sadly mars the good effects that might, under other circumstances, have been produced. Besides, we cannot admit that he renders the character of *Halbert* altogether effective; excepting in the melo-dramatic portions of the two concluding acts. He has, in the earlier scenes, to make love to *Helen* (Miss FAUCIT), and his mode of doing so is so far from orthodox as to raise many a smile. He is rough in his approaches to the fair, and we wondered not at his ill-success. The grand point of the play, was the scene representing the dwelling of *M' Ian* (WEBSTER), the chief of the Macdonalds, where the soldiery are hospitably entertained. *Glenlyon*, knowing his own murderous purpose, does not touch his wine, after uttering a toast, and this is at once seen by *Halbert*, who suspects treachery. On this, *MACREADY* suddenly rises, and charges *Glenlyon* with villainy, which gives rise to some considerable excitement both in the actors and the audience. From this, downwards, the interest is well sustained. It was obvious that *MACREADY* did his utmost to save the play from condemnation, and the author owes him much for its being so favorably received at its termination. Miss FAUCIT was more insipid than usual, and more affected, if possible. We were surprised that

Halbert should see in her so many rare virtues,—but we forgot that "so it was written in the play." Mrs. WANNER, in *Lady Macdonald*, was sufficiently energetic in the earlier scenes, and in the last act she was positively furious. She was well rewarded for this, by the galleries. PHELPS was the only actor on whom we can bestow unmixed praise. He had very little to do in the character of *Captain Robert Macdonald*, but so far from slighting it as being unworthy his powers, he rendered it quite a feature, causing us to lament that he had not been assigned a more important position. HOWE, as *Henry Macdonald*, appeared to have taken his model from some of the sect called "Jumpers." He hustled through his part with all the energy of a harlequin,—his ample capabilities for doing justice to whom, we heard discussed in the front row of the dress circle.

The poetry of the play is only of moderate pretension; it reads far better than it acts: there is not 'life' enough in it for dramatic representation, and the speeches are, on occasion, ridiculously spun out. It will run just so long as the author's friends will support it,—no longer.

At the end of the tragedy, *MACREADY* came forward, and eulogised "his friend, Mr. Serjeant Talfoord," who, at a signal, presented himself from the dress circle, and bowed condescendingly. This over, *MACREADY* was assailed with as many greens and turnip-tops (under the mis-nomer of 'wreaths') as would have sufficed to set up an honest man in trade. They had all the appearance of being brought direct from Covent Garden Market. Besides these, we should observe, the "stock" garlands of the theatre were brought into active use. So much for pre-concerted admiration of the genius of a great man!

DOWTON'S BENEFIT.—Madame GAISK has in the handsomest manner offered to sing for the benefit of the veteran Dowton. If anybody wishes to have a lesson in musical tone and expression, here is one of its secrets—real sympathy. It should be added, that Mr. Laporte has kindly permitted Mr. Dowton's committee to avail themselves of this invaluable aid—a permission the more highly to be estimated, inasmuch as any apparent sanction of a precedent subjects him to a great deal of trouble and misconception. However, the occasion being unique, the permission is justly considered to be so too.

THEATRE ROYAL, EDINBURGH.—Mr. PITCHARD's benefit was, as we anticipated it would be,—a bumper; the largest ever remembered here. On this occasion, he introduced a pupil of his, who personated *Mariana* in the *Wife*. Her name is Miss MOAVER; her talents are considerable—her beauty matchless,—and her modesty extreme. She was most enthusiastically received, and called for on her exit. We subjoin Mr. PITCHARD's 'address,' in which the young lady is further alluded to:—

"Ladies and Gentlemen—I most cheerfully obey your summons and respectfully appear before you, with, I assure you, a very grateful heart; yet placed in a difficult situation, as I feel it impossible to convey to you in words the deep sense of acknowledgment I entertain for the many kindnesses you have been pleased to lavish upon me. I have had the honor, on this occasion, of introducing to you a young lady, a novice, a native of your own dear country, and to borrow an expression from Pierre—the part I have just performed—a lady of surprising beauty; and had I not discovered that she possessed talent of no ordinary character, I would not have been the means of placing her before you in such a prominent position. I had confidence in her success, and I may venture to say that she has received from you the most flattering approval—which confirms my humble opinion of her capability. I have to thank you most sincerely for her reception. Not to detain you longer, ladies and gentlemen, I beg to offer my heartfelt wishes for the perfect and lasting convalescence of yourselves and families. On each and all may every good and every happiness wait!"

ADVERTISEMENTS.

JONES'S PROMETHEANS.—The advantages the Prometheans possess over all other instantaneous lights, are their extreme simplicity and durability, as neither time nor climate can impair their original quality. They are composed of a small glass bulb hermetically sealed, containing about a quarter of a drop of Sulphuric Acid, encompassed by a composition of the Chlorate of Potash, enclosed in Wax Papers or Wax Tapers; the latter will burn sufficiently long for sealing two or three letters. The PROMETHEANS being pleasant to use, and never failing in their purpose, are rendered nearly as cheap as the common Lucifers. To be had of all respectable Chemists, &c., or at the Manufactory, 201, Strand.

Mining Journal Office, 12, Gough-square, Fleet-street, 30th April, 1840.

NEW WORK ON THE IRON TRADE.

The Number of the MINING REVIEW this day published, contains the Fourth Part of the Paper on the IRON TRADE, by Harry Scrivenor, Esq.—this work will be completed in Twelve Monthly Parts, and so arranged as to form a separate volume at the end of the year; in addition to which the MINING REVIEW contains, Suggestions for the Use of the Blowing by Working Miners, by John Pridaux, Esq., F.G.S., Cornwall (with illustrations); conclusion of the inquiry into the Origin and Nature of Tin Bounds, by Frederick Hill, Esq., of Helston; Notice of the Copper Mines of Alten, Norway, by M. de Larocque (late French consul in that kingdom); Review of the Second Report on the Geological Survey of the Province of New Brunswick, by Abraham Gesner, F.G.S.; Scientific Bodies, &c.—The MINING REVIEW is published at the office, as above, on the 1st of each month, price Sixpence.

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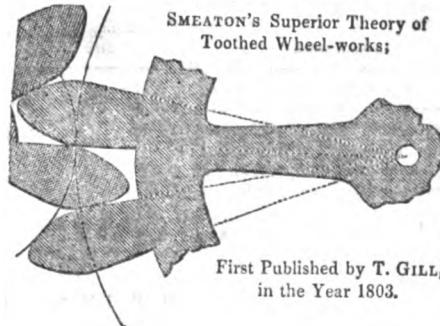
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SATURDAY, JUNE 6, 1840.

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FOREIGN SCHOOLS OF DESIGN.

The establishment of schools of design in this country may, in the progress of time, so materially increase our commercial prosperity, and so improve and elevate our national taste, that it is of importance to know, with some degree of accuracy, the principles, and to be tolerably acquainted with the practice, that can best develop the capabilities of such institutions. To acquire the requisite information, government has, within the last two or three years, caused personal inquiries to be made into the state of such schools on the continent, from whence the idea of our own at Somerset House was borrowed. In Prussia, it appears, the schools of design form a portion of the general system of art education, that again being intertwined with the grand scheme of national education. The schools for art-education are divided into three classes:—1, elementary; 2, schools for artisans; 3, academicals in the schools of fine art. Under the words "fine art," every species of decorative design, whether for manufacture, or for the lessor purposes of poetry, painting, &c., is included; and, consequently, the only difference observable in the education of the individuals intended for these branches consists in the less or greater extent to which that education is carried. In France, art-education, although very extensively diffused, appears to be under no central superintendence; neither does it appear to be combined into any organised system; but its schools are numerous, and some of them admirably managed. We may particularly mention that of Lyons. This is a school of fine art, with the study of designs for the staple manufacture of the town, silk, attached; and to promote the prosperity of this manufacture is evidently the chief object of the school—for of the annual cost, 28,500f., no less than 25,400 are paid by the town of Lyons, and only 3,100 by the government. In the choice of pupils, also, it is observable that the preference is always

given to the children of merchants and manufacturers, who are destined to the manufacture of silk. Therefore, although all students who enter the school pursue studies calculated to make them artists in the higher sense of the word, it is evident that the object sought by this arrangement is to produce first-rate designers for industry. The pupils commence by making outlines first, of parts separately; and then, as they advance, of the whole human figure; and it is not until they have completed their exercises, by being able to draw and paint the figure from the antique and living model, that they are called upon to decide whether their future pursuits will be directed towards designs for industry or for fine art. If the former, they then pass through the classes of architecture and ornamental design; then the classes of loom manufacture and of the painting of flowers from copies and from nature. In the study of designs for silk, one year is occupied in connection with ancient ornament, arabesques, &c., accompanied by exercises in designing original compositions. The flower-painting class lasts two years, and the class of the theory of manufacture an indefinite period. In this school there is comprised:—1. The general study of design; 2. The study of the process and reproductive capabilities of the manufacture to which design is applied; and 3. The study of the particular species of art rendered necessary by the conditions which these impose upon the artist.—It may be thought, that much more than is requisite is here provided for the education of the industrial artist, and that the consequence must be the production of a great number of mediocre painters, sculptors, &c. But there are various checks in the way. The profits of a skilful designer of manufacture in France are greater than those of a second-rate artist, and his talent is highly esteemed. As Mr. Dyce also justly observes:—"Were the capability of drawing the human figure as common as that of reading and writing, (which, in France, it may be said to be), we should, no more than the French do, think of identifying the former with the genius necessary for the practice of fine art, than we should suppose the latter must inevitably lead to deluge the world with poetry." On the other hand, as to the benefits derived from so liberally educating the industrial artists, it is sufficient to point to the great and highly favorable influence exercised by them in France over all the branches of manufacture with which they are connected, and, through them, over the national taste. In Lyons, the commercial value of that (in England) very uncommercial taste is so high, that a house will take a young man who exhibits more than ordinary powers into partnership, in order to monopolise his services; and so entire is the confidence reposed by

the French manufacturer in his designer, that he frequently does not see the patterns till they appear in the silk. With us, at present, there is little or no estimation of such abilities, and no sufficient remuneration offered for its production. Yet, in spite of this, at least as much is spent in connection with the patterns by English manufacturers as by French; "the difference is, that the money, which is paid in France, is paid directly to the artist; in England it is frittered away on expedients for superseding him, which if law, and honesty are to be taken into account, cannot be reckoned other than illegitimate, and which, if prudent, must, I fear, be thought very short-sighted, because the great bulk of patterns executed in England, according to the present system, must inevitably want the stamp of novelty and originality, which is not only the great characteristic of the French, but is really the advantage which the French manufacturer gains by paying liberally for the assistance and judgment of highly educated artists." Besides the class of designers whom it is the special object of the schools in question to produce, it ought to endeavor to diffuse some degree of artistic knowledge among the very numerous bodies of workmen engaged in labors requiring a certain amount of taste. With respect to our own school of design, the report considers it indispensable, that, with the study of design generally, two, at least, of our principal articles of industry—the silk manufacture and the calico printing—should be taught practically; and, in teaching these, other branches of industry are in effect taught at the same time; those two are the types of every species of weaving and printing. Instead of commencing with the human figure, it is advised, that the study of ornament, flowers, &c., should have the priority, in order that those individuals whose pursuits really would be but very slightly benefited by a knowledge of the former, might not be compelled to study it. We conclude with the following observations from the report, which appear to us as important as true:—"We shall take a very narrow view of the operation of the foreign schools, if we suppose their influence on manufacture to be due solely to that part of their organisation which has an immediate bearing on industry; or that, by making the government school more perfect in that respect than the continental establishments, any approach to the amount of good effected by the latter will be made, without the same liberal employment of the collateral aids of elementary instruction, and other means of cultivating popular taste. Every one admits, that the great evidence which we find in France of the knowledge and love of art in the cheaper kinds of manufacture is due to the ample opportunities of study provided for the common people."

THE SILK MANUFACTURES OF FRANCE.

France has made great exertions during the last ten years to increase her production of silk, so as to keep pace with the wants of the manufacturers. During the administration of M. Chaptal, she required from foreigners at least one half of the quantity of raw silk that she manufactured; and now, notwithstanding the great increase of the manufacture since the Continental peace, and especially during the last six years, she imports scarcely more than one-third.

It is well known that the raw silks of France are equal in all respects to those of Lombardy, and that if their quality does not surpass those of Piedmont, they have in general more lustre. France was the first to produce that beautiful white silk called *sina* silk (*soie sina*), and the quantity now produced of it already exceeds that of the yellow silks. It must be admitted that the encouragements granted by the government have, in a great measure, led to this result.

In all parts of southern Europe, the culture of the mulberry tree, and the fabrication of silk, appear to be making rapid strides. Italy, Spain, and especially the kingdom of Valencia, produce very valuable silks, that are manufactured into fabrics of the most magnificent kind. The whole annual produce of Spain has been estimated as high as 1,145,000 kilograms, which we consider greater than the real amount, on account of the small quantity exported from that country.

Without speaking of the production of Dalmatia, of the Morea, Illyria, and Hungary, we will look to the vast Russian empire, which is daily diminishing in the quantity of its imports of foreign silks. The island formed by the Volga, and the fertile plains of the government of Astrachan, the rich valleys of the peninsula that forms the south of Taurida, which contains not the whole coast of the Black Sea, which contains not less than 1,200 square miles, the fruitful Georgia, the districts of Derbent, Koura, and Kourba, called the land of roses, and where, according to Strabo, there are three harvests in a year, the winter is of the province of Schirwan, where the winter is only a perpetual spring,—in all these the mulberry flourishes, and its culture there may be indefinitely extended.

If, leaving Europe, we look towards Asia, the country whence the silk-worm originally came, we see the industrious and opulent states of Bengal increasing their vast plantations, obtaining as many as five or six crops in a year. Almost all the silk that Bengal exports goes to England, and it is worthy of remark, that, whilst the consumption of Eastern silks is daily increasing in Great Britain, the consumption there of the silks of Italy is decreasing, or, at least, remains stationary, a fact which is attributed by a well-informed political economist, Melchior Gioia, to the impediments that the Piedmontese government threw in the way of the export of raw silks.

Giacomo Giovanetti, a Piedmontese political economist, who appears to be the best authority to consult on such a matter, estimates the produce of the different states of Italy, in 1834, as follows:

	kilograms.
Lombardy and Italian Tyrol	2,289,000
Piedmont	926,000
The Two Sicilies	392,000
The Roman States	314,000
Tuscany	98,000
The Duchies of Parma, Modena, and Lucca	183,000
	4,202,000

As Giovanetti estimates the increase of production for Lombardy, Piedmont, and the Two Sicilies at one twelfth a year, and if we take the increase in the other Italian States to be in the same proportion, the total produce of silk in Italy, in the present

year, must be estimated at 6,269,000 kilogrammes, which appears to us, however, to be more than the real amount. England and France, which are the two principal foreign consumers of Italian raw silk, imported in 1837, the former 622,000 kilogrammes, and the latter 679,000. It would appear from tables that have been drawn up, apparently with much attention, that the total produce of the silk-producing countries in Europe, in 1833, was 6,256,000 kilogrammes, of which France produced 973,000; and the quantity imported from different parts of the world, to be manufactured by European states, was 2,064,000 kilogrammes. If we estimate the progressive increase to have been at the ratio already mentioned for Italy, the total production and consumption of silk in Europe, at the beginning of 1840, that is to say, the quantity used in manufactures, must be estimated at 14,740,000 kilogrammes.

It is to be regretted that in such a matter we are obliged to have recourse to conjectures and to proportional calculations. The statistics of this question are evidently incomplete and doubtful, but it is grievous to state that no documents exist by which they can be rendered more certain. This estimate would, in our opinion, be found to be generally lower than it ought to be; at least it is so as regards France. In estimating the production of France in 1832 at only 973,000 kilogrammes, the Italian political economist appears to have understated the amount. From the facts developed by the inquiry in 1834, it appeared that there was then a produce of about 1,600,000 kilogrammes, and according to the investigations subsequently instituted by the administration, the amount ought to be stated, at the least, at 2,200,000 kilogrammes. If we add to that quantity the silks imported, which, after deducting for re-exportation, amount to about a million of kilogrammes, we shall have a total quantity of 3,200,000 kilogrammes, which corresponds very nearly with the quantity of silks which are supposed to be manufactured yearly in France.

England retains for consumption the greater part of the manufactured silks she imports; France, on the contrary, only imports a small quantity of foreign silks, which are almost all intended for shipment, and form part of the large exportations of silk tissues which France sends to England and the United States. England lays enormous duties on the importation of our silk tissues, varying from 27 to 70 francs per kilogramme (duties seven times higher than the German confederation imposes on these articles), which forms not one of the least reproaches that we have to make against the proceedings of our English neighbors, which are generally illiberal in a commercial point of view.

The following is the estimated value of the imports and exports of silks in France, from 1827 to 1838.

Silks imported for consumption.	Silk tissues exported, of French manufacture.
francs.	francs.
1827...32 millions.....	115 millions.
1828...26 "	115 "
1829...46 "	115 "
1830...34 "	111 "
1831...27 "	119 "
1832...38 "	107 "
1833...53 "	139 "
1834...55 "	112 "
1835...50 "	144 "
1836...41 "	140 "
1837...50 "	190 "
1838...61 "	139 "

We thus perceive, by taking the two extremes, 1827 and 1838, the importation of silks has almost doubled, whilst the exportation of silk tissues has only increased about one-fifth. As the indigenous production of silk has during this interval very considerably augmented, we may say that it is the home consumption which has almost exclusively benefited by the extension of the manufacture. A different result would, no doubt, be more satisfactory as regards our foreign trade.

It appears from a table of the production of raw silks in France from 1810 to 1835, that in those twenty-five years, the production has increased 93 per cent, and the price has risen in the same period 22 per cent. This last fact is remarkable, because it is opposed to the opinions of political economists. According to the ordinary course of things, the price ought to diminish nearly in proportion to the amount of the increase of production. This, however, is assuming that the demand had diminished, or at least remained stationary; but the progressive rise of prices attests, on the contrary, that the increased demand has greatly exceeded the increased production.

This review of the production of silk, both in France and other countries, naturally directs attention to the condition of the silk manufactures of France. To speak of the manufacture of silks is to speak of Lyons. That city has been called the metropolis of the south of France; it may be called also the manufacturing metropolis of the whole country. Situated on the banks of two magnificent streams of water, which open a communication with the north and the south, with the Mediterranean and the Rhine, or rather with the ocean, it is the central point of the commerce of France, and the route by which all the goods transmitted from the Mediterranean towards the East and Germany must necessarily pass, by the canal from the Rhone to the Rhine.

The commercial importance of Lyons is mainly to be attributed to its silk manufactures. In 1809, which was the most prosperous epoch of the empire, there were 12,000 looms at work in Lyons; the peace of 1814 opened new markets for export, and from 1815 to 1830 there have been from 15,000 to 26,000 looms at work there. Since 1830 the number has continued to increase, and at the present time it is calculated that the silk manufacture of Lyons occupies 31,000 looms in the town, and 9,000 in the neighboring country. Each of these looms works annually from 28 to 30 kilogrammes of silk, and produces in value about 2,500 frs. of silk goods. The total produce of the silk manufactures of Lyons may therefore be stated to be 100 millions of francs. It must be borne in mind, however, that the manufacture, being one of taste and luxury, is frequently exposed to suffer from the wants which affect the commercial prosperity of Europe, or the internal tranquillity of the country. Thus, in 1837, the financial crisis of the United States reacted on the Lyonnese manufactures in so distressing a manner that the production of silks was reduced one third. It is known, in fact, that the greatest part of the exports of the silk manufactures of Lyons goes to the United States.

Of all our manufactures, those of silk and our wines supply the best means of exchange, in all parts of the world, for those materials which are essential for our manufactures, such as the cottons and woods of America. There are, therefore, in this point of view, few products of industry or manufacture that deserve more encouragement from the country. Of all the silks manufactured at Lyons, a fifth part only is consumed in France, the other four-fifths are exported to the United States, to England, Germany, Italy, and Switzerland. It appears from a table of the exports of silk manufactures from 1827 to 1838, that the exports to England and the United States have increased, the quantity exported to the latter being, in 1828, 1,397 quintals, and in 1838, 2,513 quintals; and to England, in 1827, 714, and in 1838, 956 quintals.

There has been a decrease during the same period in the exports to the Low Countries, to Germany, and Switzerland. The silk manufacture has, in fact, of late years progressed so rapidly in Germany and Switzerland, as well as in Italy, as to begin to compete in the continental markets, and even in America, with the French manufacture, especially in light tissues; for in articles of taste it is generally admitted that Lyons has hitherto no rival.

Let us add, in order to complete the account of the exports of French silks, that it is to the United States, and the states of South America, the in-

creased exports have been principally sent. There our tissues possess an undisputed priority. This fact ought not to be overlooked at a time when it is in contemplation greatly to facilitate our Transatlantic navigation by steam-ships.

We cannot consider the question of silk manufactures without naturally directing our attention to our African colonies. Independently of important political considerations, which should for ever unite Algeria to France, there are others which intimately connect this conquest with our most flourishing manufactures. It will not be in vain, therefore, in a commercial point of view, that we have taken this part of the African shore from the barbarous pirates who infested those seas. The soil of Algeria, where the products of tropical climes, and those of Europe, flourish luxuriantly, will soon have the mulberry tree growing on its vast plains, and numerous attempts to cultivate it have already been successfully made. The interests of Algiers and Lyons should henceforth be united, and between those two points, the distance of which will be diminished by steam-navigation, the Mediterranean and the Rhone form admirable means of communication.—*Moniteur Industriel.*

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING MAY 30, 1840.

ENGLAND.

DANIEL DUNN, King's-row, Pentonville, improvements on the screw press, used in the pressing of paper, books, tobacco, or bale goods, used in the expressing of oil, &c., May 25.

THOMAS HUGHES, Newbury, Berkshire, miller, improvements in the method of restoring foul or smutty wheat, and rendering the same fit for use, May 25.

THOMAS MOLINEAUX, Stoke St. Mary, Somerset, improvement in machinery for spinning and twisting silk and wool, and for roving, spinning, and twisting flax, hemp, and cotton, &c., May 25.

THOMAS PARRANT BIRT, Strand, Middlesex, improvements on, or additions to wheel carriages, May 25.

JOHN PARKER, Knightsbridge, Middlesex, wire fence maker, improvements on or additions to park or other gates, May 25.

DOMINIQUE PIERRE DEURBROUCQ, Leicester square, an apparatus adapted to cool wort or must, previous to its being set to undergo the process of fermentation, and also for the purpose of condensing the steam arising from stills, May 25.

WILLIAM HENRY GIBBS, Castle-court, Lawrence-lane, London, and **ABRAHAM DIXON**, Huddersfield, York, a new kind of piece goods, formed by a combination of threads of two or more colors, the manner of combining and displaying such colors, in such piece goods, constituting the novelty thereof, May 25.

JOSEPH SMITH, Tiverton, Devon, lace-maker, improvement on the stocking frame, and other goods usually made on the stocking frame, May 25.

JOHN LOACH, Birmingham, Warwick, brass-founder, a self-acting sash fastener, which fastening is also applicable to other purposes, May 25.

RICHARD SLAGE, Kilmhurst forge, Doncaster, York, an improvement in the manufacture of springs, chiefly applicable to carriages, May 25.

LOUIS JOSEPH MARIE, MARQUIS DE CAMPBIS, Leicester-square, rotary steam-engines, and the apparatus connected therewith, May 25.

JAMES BARLOW FERNANDEZ, Norfolk-street, Strand, certain improvements in the construction of blinds or shades for windows, or other purposes, May 26.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO
THE WEEK ENDING MAY 30, 1840.

(Continued from No. 43.)

ENGLAND.

MOSSES POOLE, Lincoln's-inn, Middlesex, certain improvements in looms for weaving by, and of steam or other power, figured and ornamental fabrics of silk, hemp, flax, wool, and cotton, which invention or improvements in looms, are applicable to work "Jacquard" machinery by power; parts of which invention or improvements in looms, are also applicable to other steam looms, and also to Jacquard machinery and to hand looms, May 12.—The improvements consist in the mode in which the loom is put into motion by means of an eccentric, fixed upon the driving shaft: it would be difficult to describe the improvements which the inventor claims, without the aid of drawings.

There are eleven claims, and most of them are for the manner in which the power is applied to the loom; he also claims the fixing of a card perforated with a number of holes which the silk or fibre passes to the roller. This card is fixed into a frame which is supported by the framing of the loom.

PIERRE AUGUSTE DUCOTE, Esq., St. Martin's-lane, Middlesex, lithographer, improvements in printing china, porcelain, earthenware, and other like wares, and for painting on paper, calicoes, silks, or woollens, oil cloths, leather, and other fabrics, and for an improved material to be used in printing, May 21.—These improvements consist in the use of stone for the purpose of giving the impression to the wares instead of copper, as at present in use, the inventor using the same compositions as employed in the trade. The inventor considers the introduction of the lithographic stone impressions better than the copper impressions, and they will render the ware much cheaper, and facilitate the operation of printing: the inventor also claims the introduction of zinc plates for taking off the impressions to be used for the wares.

JAMES CRAIG, of Newbattle paper mill, in the parish of Newbattle, and county of Edinburgh, improvements in the machinery for manufacturing paper, May 22.—In this improvement in the machinery for the manufacturing of paper, the inventor claims the introduction of a wheel into the vessel, for preparing the rags into pulp; this wheel has on its periphery a number of boards, similar to a paddle wheel in a steam-boat: to this wheel, motion is communicated and it is made to revolve, which causes the whole matter to circulate, producing a better pulp than has hitherto been made by the old machinery. These improvements are also applicable to old machinery.

The next improvement is in the washing of the rags by means of a wheel, having arms projecting from the centre or spindle. This wheel is also made to revolve, and has a peculiar form given to the arms. The inventor claims the introduction of the wheels in both cases.

JAMES MALLEY, of Manchester, Lancashire, gent., improvements in apparatus or instrument for the cutting of cotton, or the wicks of lamps, communicated from abroad, May 25.—The instrument consists of a circular frame, where the wick of an Argand lamp is put, a spindle is introduced from the top of the frame carrying on its end a circular piece (of whatever material the spindle is made) and having a cutter projecting from it: turn the spindle and it will cut the wick in a straight line, or at right angles; this is simply the instrument.

JAMES SABBERTON, of Golden-square, Middlesex, tailor, a fastening to attach straps to the bottoms of trousers, May 26.—This method of fastening leather or cloth to the trousers, is by means of a frame similar to a common buckle, but instead of putting

the cloth through the frame as in the buckle, this method opens by the side, and has knobs upon the frame, which compress against each other, when the buckle is closed and secures the strap.

GEORGE RENNIE, of Holland-street, Blackfriar's, Surrey, civil engineer, certain improved methods of propelling vessels May 26.—This improvement is in the form to be given to the paddle board or float. The inventor gives the board the form a trapezium (and claims the idea) instead of the rectangular form which is given to the floats of the common paddle. The inventor considers by this form of float, he can obviate the loss of power, by the water being carried up by the wheel or what is termed the back water: again, the dip of the float in the water will be more gentle, and will remove the vibration of the vessel.

Second improvement consists in the form of a wheel, called by the inventor a conoidal propeller, which can be placed in the stern of the vessel, or in the place usually occupied by the ordinary paddle-wheels.

ENTERED AT THE ROLLS CHAPEL OFFICE, UP TO
THE WEEK ENDING MAY 30, 1840.

(Continued from page 292.)

ENGLAND.

GEORGE HANSON, Huddersfield, York, plumber and glazier, certain improvements in the construction of cocks or taps for drawing off fluids, May 7.—First improvement is the peculiar construction of the barrels or cylinders of cocks and valves. The pipes, or pipe and cock, are connected, with a division between them, and the lateral openings on each side of the division are covered with the tube of the barrel, that is made to slide over these lateral openings. There are also apertures in the sliding tube, which being placed immediately in coincidence with the lateral openings on each side of the division, a passage is made, whereby the liquor may pass from one pipe to the other, or from a pipe to the cock or tap. By means of a lever, the sliding tube of the outer barrel may be worked to and fro, whereby the liquor will be turned on or off as required.

This improvement can be worked on the same principle, within a stop cock or bib cock.

Lastly, there is an improvement for the adaptation of cupped leather packings to cocks or valves; also a novel mode of forming elastic metallic packings in shape of a cone, which yield a gentle and easy pressure outwards, towards the inner surface of the tube or pipe.

THOMAS YATES, Bolton-le-Moors, Lancashire, manufacturer, certain improvements in the construction of looms for weaving, and also the application of the same in order to produce certain descriptions of goods or fabrics, by steam or other power, May 7.—First improvement is for the purpose of effecting a greater facility of forming a variety of shedding the warp, in connection with the healds or shafts, and working various descriptions of cloth.

On one end of the shaft, connected with the driving wheel, is a tappet plate, with concentric slots or mortices arranged on its surface.

Bowls are attached by screw-nuts in these slots, on any part of the tappet wheel, as required. As this wheel revolves, the bowls are made to press against the levers or treadles, connected with the healds or healds, whereby is produced, according to the position of the bowls, a greater facility of forming a variety of shedding the warp.

Second improvement is a novel arrangement of mechanism, for the purpose of lifting and depressing the shuttle boxes to or from the level of the shuttle race. A concentric tappet plate, similar to that which works the healds, is affixed on the same shaft, and with bowls arranged in the same manner, for the purpose of working a lever, at the reverse end of which is a vertical lever, supporting the shuttle boxes with the different colored or fine and coarse webs.

Third improvement is the mode of raising the

griff or grate of the Jacquard loom, to complete the weaving or putting in of the quilting thread. A bevelled cog wheel on the shaft of the driving wheel causes, by another bevelled wheel, an upright shaft to revolve; the upper end of which has a double screw connected with the griff, whereby the workman can, when requisite, cause a shedding of the colored warps, and complete the quilting at the same moment.

Fourth improvement is the mode of throwing the loom out of gear with the driving power, either when the weft thread breaks, or is not put in, or when the taking up of the cloth or work-beam is not equal to its production, such new motion being governed by the ordinary beat or vibration of the lathe. The click attached to the vibrating lathe, gives motion to the ratchet wheel, connected with the taking up movement wheel, by which means, if a thread should be omitted, or too much produced, the lathe, in its beat, causes a horizontal lever to move the driving power out of gear.

FRANCIS WORRELL STEVENS, Chigwell, Essex, schoolmaster, *certain improvements in apparatus for propelling boats and other vessels on water*, May 19.—The object of these improvements is to avoid the usual lift of back water, and that blow which an horizontal rectangular float strikes the water, and to attain a smoothness in the action of the engine, whatever the sudden immersion of the wheel may be; also to avoid tremor. By this arrangement the wheel is enabled to take a greater dip, or work in a denser medium, than the common paddle-wheel; the speed may be regulated by an alteration of the angle of the floats.

The floats are made of segmental form, and are affixed to the end of round arms projecting from the boss of the wheel. They are placed at an angle of 25 to 35 degrees, being secured by clamps, in whatever position required. A bar of iron runs on each side of the float to the boss, to give it steadiness.

When each float is at a vertical position, it makes an acute angle of 35 with the keel of the vessel.

MILES BERRY, Chancery-lane, *an invention or discovery, by which certain textile or fibrous plants are rendered applicable to making paper and spinning into yarns, and weaving cloth, in place of flax, hemp, cotton, and other fibrous materials*, May 19.—This plant grows on the southern coast of Spain, near the Mediterranean Sea, and in Greece. It is known by the name of "Esparto," and is of the class of plants named "Stipa," genus "Gramina."

In employing it for paper, it should be saturated in hot water, then beaten and combed, and afterwards placed into lime-water; the relative quantity must be 2lb. of lime to 100lb. of "Esparto." Being allowed to ferment, it is then bleached in the usual way; and to give it substance, it is put into the pulp-engine with a mixture of rag.

To employ it for rope, yarn, &c., it must be prepared in a similar manner to hemp, and is bleached with chloride of lime or other bleaching material.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentee, that his specification will be published in the "INVENTORS' ADVOCATE," of July 11. The party will receive, in addition, a *private communication* to the same effect.

Charles Greenway, Douglas, Isle of Man, due July 4.

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED FROM JULY 1ST TO DECEMBER 31ST, 1831.

(*The Year continued from Page 308.*)

- Apparatus for checking chain cables, July 13, Batten, W.
- Apparatus for shaping plates of metal for various articles, Dec. 22, Kreeft, J. C. T.
- Beating time,—see Musical, G. A. W.
- Bedsteads, &c., Dec. 22, Wingfield, R. W.
- Biscuit,—see Bread, C. J.
- Blasting rocks,—see Igniting, B. W.
- Bobbin-net lace, Oct. 3, Heathcoat, J.
- Bobbin-net lace, Dec. 15, Alcock, T.
- Bobbin-net lace, Dec. 31, Sneath, W.
- Boilers and steam-engines, Sept. 28, Berry, M.
- Boilers,—see Steam-engines, P. G. H.
- Bread and biscuit-making, Oct. 14, Cowderoy, J.
- Bridges,—see Iron, M. J.
- Buttons, Aug. 30, Aingworth, B.
- Buttons, Oct. 7, Christopher J.
- Cabinet-work, upholstery articles, Oct. 27, Guppy, S.
- Cables and rope-making, Dec. 1, Sievier, R. W.
- Cabriolets,—see Heads, B. J.
- Carding and slubbing engine, Nov. 22, Seldon, D.
- Carriages, Aug. 10, Mason, W.
- Cartridges,—see Fire arms, D. A.
- Chain-cables,—see Apparatus, B. W.
- Chimneys for conducting smoke, Oct. 19, Collard, T. H.
- China,—see Colored impressions, P. W. W.
- Clogs,—see Pattens, M. J.
- Colored impressions from engravings applied to china, glass, &c., Sept. 17, Pottall, W. W.
- Composition for sheathing, painting, &c., ships bottoms, &c., July 6, Watterstedt, Baron C.
- Copy-book or writing tablet, and indelible ink to be used therewith, Oct. 14, Dolier, W.
- Copying apparatus,—see Drawing, A. J. M. E.
- Cotton yarns,—see Ornamental, G. P.
- Culinary apparatus, July 8, Hicks, R.
- Dining tables,—see Fastening, M. G.
- Drawing and copying apparatus, Aug. 10, Ardit, J. M. E.
- Engravings,—see Colored, for china, P. W. W.
- Evaporating and boiling fluids, Aug. 27, Perkins, J.
- Evaporating syrup or juices, Sept. 22, Ure, A.
- Excavating,—see Tunnelling, D. H. G.
- Fastening for dining tables, &c., Nov. 9, Minter, G.
- Fire-arms and projectiles, July 15, Burgh, J. de Marquis.
- Fire-arms, cartridges, primings, July 13, Demon-dion, A.
- Fire-arms, guns, &c., Sept. 24, Dupe, W.
- Fire-arms, guns, &c., Dec. 15, Moser, A. A.
- Fire-places,—see Grates, P. J.
- Flooring,—see Preparing, M. M.
- Furnaces, &c., Dec. 22, Nott, B.
- Gas-making, Oct. 12, Lowe, G.
- Gas-meter, Oct. 3, Crosley, S.
- Generating steam, July 2, Perkins, J.
- Grates and fire-places, July 13, Pycroft, J.
- Guns,—see Fire-arms, M. A. A.
- Heads or hoods of cabriolets, gigs, &c., July 27, Bance, J.
- Heating apparatus, July 30, Perkins, A. M.
- Heating fluids and generating steam, Nov. 15, Brunton, T.
- Igniting gunpowder in blasting rocks, Sept. 6, Bickford, W.
- Ink, indelible,—see Copy-book, D. W.
- Iron Bridges, piers, roofs, &c., Oct. 31, Macdonald, J.
- Iron, manufacturing, Dec. 22, Dawes, J. S.
- Lamps, Oct. 4, Bradford, D. D.
- Latches,—see Locks, Y. J.
- Life-boats at shipwreck, Sept. 24, Werninck, H. H.
- Lithographic and printing apparatus, July 6, Jacquesson, A.
- Locks and Latches, July 27, Young, J.
- Mangel-wurzel manufactured for articles of commerce, Oct. 6, Young, P.
- Medicinal composition for internal and external complaints, Dec. 17, Strombom, J.
- Metal plates,—see Apparatus, K. J. C. T.
- Mills for grinding corn, &c., Dec. 15, Savoye, C. M.
- Mills of metal for grinding corn, drugs, &c., Aug. 11, Seldon, D.
- Musical instruments for beating time, Aug. 13, Gillet, A. W.
- Nail-making, July 27, Church, W.
- Nails or tacks for ornamenting boxes, &c., July 13, Crosser, R.
- Nails,—see Pins, J. W.
- Ornamental cotton yarns for embroidering cotton and other fabrics, Dec. 22, Greaves, P.
- Painting,—see Composition, W. B. C.
- Paper-making machine, Aug. 3, Hall, J.
- Paper-making, Aug. 31, Jaquier, J. J.
- Pattens or clogs, substitute for, Sept. 27, Myatt, J.
- Pens and penholders, July 13, Mordan, S.
- Pens and penholders, Sept. 20, Brockedon, W.
- Pens, metallic, Sept. 27, Gillott, J.
- Pianofortes, July 20, Allen, W.
- Piers,—see Iron, M. J.
- Pine, rivets, screws, and nails, Dec. 20, Jones, W.
- Piston and valve for steam, gas, &c., steam machinery, Dec. 22, Hall, S.
- Power gained in tides and currents, Sept. 28, St. George, O.
- Preparing boards for flooring and other purposes, Dec. 22, Muir, M.
- Primitives,—see Fire-arms, D. A.
- Printing apparatus,—see Lithographic, J. A.
- Printing silk, cotton, &c., Dec. 3, Payne, C. M.
- Projectiles,—see Fire-arms, B. J. de Marquis.
- Propelling boats,—see Steam-engines, P. M.
- Propelling machine, Aug. 10, Cochrane, A.
- Propelling machinery, Aug. 2, Anderson, Sir J. C.
- Propelling vessels and raising flids, Oct. 13, Hale, W.
- Raising fluids,—see Propelling vessels, H. W.
- Raising water, &c., Nov. 15, Fuller, T. J.
- Roofs,—see Iron, M. J.
- Ropes,—see Cables, S. R. W.
- Roving and slubbing frames for preparing cotton, &c., July 13, Milne, J.
- Roving or spinning flax, hemp, &c., Sept. 24, Lang, J.
- Roving or spinning silk, &c., Oct. 27, Bates, J.
- Rudders for ships, &c., Nov. 19, Holdsworth, A. H.
- Salt extracted from salt pans, Oct. 14, Jump, W. A.
- Screws,—see Pins, J. W.
- Sea or other water, to fresh water, Sept. 20, Conahan, M.
- Sheathing,—see Composition, W. B. C.
- Slubbing,—see Carding, S. D.
- Slubbing,—see Roving, M. J.
- Smoke, consuming, July 20, Maw, Lieut. H. L.
- Smoke,—see Chimneys, C. T. H.
- Spinning-frames,—see Throstle-frames, G. H.
- Spinning,—see Roving, B. J.
- Spinning,—see Roving, L. J.
- Steam-engines and boilers, Sept. 16, Palmer, G. H.
- Steam-engines and propelling boats, July 13, Poole, M.
- Steam-engines,—see Boilers, B. M.
- Steam, generating,—see Heating, B. T.
- Steam machinery,—see Piston, H. S.
- Sugar, purifying, July 27, Robinson, M.
- Tanning hides, &c., Oct. 7, Drake, W.
- Throstle-frames and spinning-frames for spinning yarn or threads, Dec. 22, Gore, H.
- Tides and currents,—see Power, St. G. O.
- Tunneling and excavating, Sept. 5, Dyar, H. G.
- Upholstery,—see Cabinet, G. S.
- Valve,—see Piston, H. S.
- Water and fluids, clarifying, Sept. 9, Neville, J.
- Wheels, &c., Sept. 5, Forrester, G.
- Writing tablet,—see Copy-book, D. W.

CONSUMPTION OF SMOKE.—To consume the smoke from a boiler furnace,—let the green coal be put into the furnace, as near to the door as possible, and leave the door itself from two to three inches open, to allow the cold air to enter. This will keep down the part of the smoke, which will be consumed. The same may be applied to marine furnaces,

BRITISH PATENTEES.

AN ALPHABETICAL LIST OF INDIVIDUALS WHO HAVE TAKEN OUT PATENTS IN ENGLAND, FROM JULY 1ST TO DECEMBER 31ST, 1831.

(The Year continued from Page 308).
 Aingworth, Benjamin, Buttons, Aug. 30.
 Alcock, Thomas, Bobbin-net lace, Dec. 15.
 Allen, William, Pianofortes, July 20.
 Anderson, Sir James C., Propelling machinery, Aug. 2.
 Ardit, Jean M. E., Drawing and copying apparatus, Aug. 10.
 Bance, John, Heads or hoods of cabriolets, gigs, &c., July 27.
 Bates, Joshua, Roving 'or spinning silk, &c., Oct. 27.
 Batten, William, Apparatus for checking chain cables, July 13.
 Berry, Miles, Boilers and steam-engines, Sept. 28.
 Bicksford, William, Igniting gunpowder in blasting rocks, Sept. 6.
 Bingham, William,—see Dupe, William.
 Bradford, Daniel D., Lamps, Oct. 4.
 Brockedon, William, pens and penholders, Sept. 20.
 Brunton, Thomas, Heating fluids, and generating steam, Nov. 15.
 Brunton, Thomas,—see Fuller, Thomas J.
 Burgh, John de Marquis, Fire-arms and projectiles, July 15.
 Christopher, John, Buttons, Oct. 7.
 Church, William, Nail-making, July 27.
 Cochrane, Alexander, Propelling machine, Aug. 10.
 Collard, Thomas H., Chimneys for conducting smoke, Oct. 19.
 Cosnahan, Mark, Sea or other water to fresh water, Sept. 20.
 Cowdry, John, Bread and biscuit-making, Oct. 14.
 Crosley, Samuel, Gas-meter, Oct. 3.
 Dawes, John S., Iron, manufacturing, Dec. 22.
 Demondion, Augustus, Fire-arms, cartridges, primings, July 13.
 Dolier, William, Copy-book or writing-tablet, and indelible ink to be used therewith, Oct. 14.
 Drake, William, Tanning hides, &c., Oct. 7.
 Dupe, William, Fire-arms, guns, &c., Sept. 24.
 Dyar, Harrison G., Tunneling, and excavating, Sept. 5.
 Forrester, George, Wheels, &c., Sept. 5.
 Fuller, Thomas J., Raising water, &c., Nov. 15.
 Gillet, Augustus W., Musical instrument for beating time, Aug. 13.
 Gillott, Joseph, Pens, metallic, Sept. 27.
 Gore, Henry, Throstle-frames, and spinning-frames, for spinning yarn or thread, Dec. 22.
 Greaves, Pierrepont, Ornamental cotton yarns for embroidering cotton, and other fabrics, Dec. 22.
 Guppy, Sarah, Cabinet-work, upholstery articles, Oct. 27.
 Halee, William, Propelling vessels, and raising fluids, Oct. 13.
 Hall, John, Paper-mksing machine, Aug. 3.
 Hall, Samuel, Piston and valve for steam, gas, &c., steam machinery, Dec. 22.
 Heathcoat, John, Bobbin-net lace, Oct. 3.
 Hicks, Robert, Culinary apparatus, July 8.
 Holdsworth, Arthur H., Rudders for ships, &c., Nov. 19.
 Jacquasset, Adolphe, Lithographic and printing apparatus, July 6.
 Jaquier, Jean J., Paper-making, Aug. 31.
 Jones, William, Pins, rivets, screws, and nails, Dec. 20.
 Jump, William A., Salt extracted from salt-pans, Oct. 14.
 Kreeft, John C. T., Apparatus for shaping plates of metal for various articles, Dec. 22.
 Lang, James, Roving or spinning flax, hemp, &c., Sept. 24.
 Ledsam, Daniel,—see Jones, William.
 Lowe, George, Gas-making, Oct. 12.
 Macdonald, James, Iron bridges, piers, roofs, &c., Oct. 31.
 Mason, William, Carriages, Aug. 10.

Maw, Lieut. Henry L., Smoke, consuming, July 20.
 Milne, John, Roving and slubbing frames for preparing cotton, &c., July 13.
 Minter, George, Fastening for dining tables, &c., Nov. 9.
 Mordan, Sampson, Pens and penholders, July 13.
 Mordan, Sampson,—see Brockedon, William.
 Moser, Abraham A., Fire-arms, guns, &c., Dec. 15.
 Muir, Malcolm, Preparing boards for flooring and other purposes, Dec. 22.
 Myatt, John, Pattens or clogs, substitute for, Sept. 27.
 Neville, James, Water and fluids, clarifying, Sept. 9.
 Nott, Benedict, Furnaces, &c., Dec. 22.
 Oliver, John P. R.,—see Pottsall, W. W.
 Palmer, George H., Steam-engines and boilers, Sept. 16.
 Payne, Cornelius M., Printing silk, cotton, &c., Dec. 3.
 Perkins, Augier M., Heating apparatus, July 30.
 Perkins, Jacob, Generating steam, July 2.
 Perkins, Jacob, Evaporating and boiling fluids, Aug. 27.
 Poole, Moses, Steam-engines, and propelling boats, July 13.
 Pottsall, William W., colored impressions from engravings applied to china, glass, &c., Sept. 17.
 Prosser, Richard, Nails or tacks for ornamenting boxes, &c., July 13.
 Pycroft, James, Grates and fire-places, July 13.
 Robinson, Marmaduke, Sugar, purifying, July 27.
 Savoie, Claude M., Mills for grinding corn, &c., Dec. 15.
 Seldon, David, Carding and slubbing-engine, Nov. 22.
 Seldon, David, Mills of metal for grinding corn, drugs, &c., Aug. 11.
 Sievier, Robert W., Cables and rope-making, Dec. 1.
 Smith, John,—see Dolier, William.
 Sneath, William, Bobbin-net lace, Dec. 31.
 St. George, Oliver, Power gained in tides and currents, Sept. 28.
 Strombom, Isaac, Medicinal composition for internal and external complaints, Dec. 17.
 Ure, Andrew, Evaporating syrups and juices, Sept. 22.
 Werninck, Henry H., Life boats at shipwreck, Sept. 24.
 Wetterstedt, Baron C., Composition for sheathing, painting, &c., ships' bottoms, &c., July 6.
 Wingfield, Robert W., Bedsteads, &c., Dec. 22.
 Young, John, Locks and Latches, July 27.
 Young, Peter, Mangel-wurzel manufactured for articles of commerce, Oct. 6.

La Cambre, G. G., of Brussels, rue Royale Neuve, a patent of invention for 5 years, for a helicoidal ventilator, for ventilating mines, May 11, 1840.

Mariette, Guillaume, of Cheratte, near Liege, a patent of invention for 10 years, for a pistol of a new construction called Marietti's self-priming pistol, May 11, 1840.

Barbanson, C. H. C., of Brussels, quai au Foin, No. 31, a patent of addition for 15 years, to date from Dec. 31, 1839, for improvements in the new processes applicable to sugar-making, for which he obtained a patent Dec. 31, 1839, May 11, 1840.

Van Cutsem, C. and Cantineau, E., of Brussels, quai aux Semences, No. 13, a patent of improvement for 10 years, to date from April 10, 1838, for improvements in the process of refining salt by steam, for which Cantineau obtained a patent April 10, 1838, May 11, 1840.

Newton, William, of London, represented by Prisse, Ixelles, rue du Berger, No. 79, a patent of importation and improvement for 5 years, for an improved method of revivifying animal charcoal, which has been used in certain processes of manufactures, May 11, 1840.

Lardos, of Brussels, rue de la Madeleine, No. 38, a patent of importation for 5 years, for posting bills on tablets (planches-annonces), May 11, 1840.

Slaughter, William Ed., of Loudon, represented by Prisse, Ixelles, rue du Berger, No. 79, a patent of importation for 5 years, for improvements in a machine or apparatus for weighing different kinds of merchandise, May 11, 1840.

Meyer, B. Jodocus, of Amsterdam, represented at Brussels by Vanderlinden, Montagne du Parc, No. 2, a patent of importation for 5 years, for an artificial movement of water-power, by means of which factory-engines are worked with a saving of steam, May 11, 1840.

Vandenbergh de Binckum, J., of Tirlemont, a patent of invention for 15 years, for the direct and indirect application of the oils and other products extracted from bituminous schiste, May 12, 1840.

De Changy, C. S., of Brussels, rue du Jardin d'Idalie, No. 617, a patent of invention for 10 years, for a portable sawing-machine, for sawing wood at private dwellings, May 12, 1840.

Delvaux, Ed., Brussels, Nouveau Marché-sous-Grains, No. 3, a patent of invention for 10 years, for a machine called Carte Filo Finisseur, for the purpose of spinning wool, at the same time that it is carded without the aid of the frames or mule jenny, May 12, 1840.

De Changy, C. S., of Brussels, rue du Jardin d'Idalie, No. 617, a patent of invention for 10 years, for a chandelier night-lamp, (candelabre veillouse), May 12, 1840.

Coens, L., of Bruges, rue de la Monnaie, No. 36, a patent of improvement for 10 years, for a process called "laperographie," for the purpose of printing on cloth, in colors, and gold and silver imitations of embroidery, May 12, 1840.

Gaurion, N. C., of Brussels, rue Finkette, No. 17, a patent of importation for 5 years, for a musical instrument called "melophone," May 12, 1840.

Vandenbergh de Binckum, J., of Tirlemont, a patent of importation for 5 years, for a process of extracting oils and other products from bituminous schistes, May 12, 1840.

Fraikin, L. F., of Brussels, place du Samedi, No. 18, a patent of invention for 10 years, for an apparatus heated by steam or by warm water, for the purpose of drying woollen cloths, May 13, 1840.

Malibran, of Paris, represented at Brussels by Doré, St. Josse ten Noode, Chausée de Louvain, No. 24, a patent of importation for 5 years, for a new regulator for regulating the supply of gas to gas-burners, May 13, 1840.

Croll, A. A., of London, represented at Brussels by Delianson Clark, Marché aux Poulets, No. 1, a patent of invention for 15 years, for improvements in

FOREIGN PATENTS.—BELGIUM.

LIST OF PATENTS RECENTLY GRANTED BY THE BELGIAN GOVERNMENT.

(Continued from No. 41.)

La Société Anonyme, for the manufacture of mirrors, glass, &c., &c., of Brussels, rue de Jericho, a patent of invention for 15 years, for a process of manufacturing sulphuric acid without the use of sulphur, April 5, 1840.

Adams, (William Bridges) and Buchanan, J., represented by Urting, St. Josse ten Noudé, rue des Arts, No. 139, a patent of invention for 10 years, for improvements in the construction of wheel carriages, some of which are applicable to other useful purposes, May 11, 1840.

Chaudron Junot, C. J. E., of Paris, represented at Brussels by D. Clark, Marché aux Poulets, No. 1, a patent of invention for 15 years, for new and improved processes of refining and solidifying tallow fat, oils, and other oleaginous substances, May 11, 1840.

Falisse, L., of Liège, rue Pêcheurue, No. 1409, a patent of invention for 5 years, for a new system of fastening, applicable to fire-arms loaded at the breach, May 11, 1840.

manufacturing and purifying gas for illuminating purposes, in obtaining the ammonia resulting therefrom, and for a new method of using fuel for such manufacture, May 16, 1840.

Haddan, John Coope, of London, represented, at Brussels by A. Price, rue des Carrières, No. 5, a patent of invention for 15 years, for certain improvements in the construction of the wheels and axles of locomotive engines, wagons, &c., used on railroads, May 16, 1840.

Devolder, J. F., of Brussels, Marché aux Charbons, No. 2, a patent of importation for 5 years, to date from April 13, 1839, for an economical heating stove, May 16, 1840.

Carpmael, of London, represented at Brussels by Dixon, Hôtel de Groenendaal, a patent of importation for 5 years, for improvements applicable to vessels generally, and particularly to steam boats, May 16, 1840.

Taverniers, Pierre, of Louvain, rue des Corbeaux, No. 63, a patent of invention for 10 years, for the manufacture of a new kind of confectionary bread (*pain à la Grec*), May 25, 1840.

Hayward, W. Robertson, and Obert, L. H., Ixelles, chaussée d'Etterbeek, No. 152, a patent of invention for 15 years, for improvements in the construction of the fire-places of locomotive engines, May 25, 1840.

Devegni, Auge, represented at Brussels by La Vallée, rue des Alexiens, No. 64, a patent for 15 years, to date from the 27th Dec. 1839, for improvements on the patents granted to him the 27th Dec., 1839, the 13th and 18th Feb. 1840, for a new system of metallic cords, May 25, 1840.

La Société du Phénix, of Ghent, a patent for 15 years, to date from the 23d March 1839, for improvements in looms for weaving by machinery all fibrous substances, for which a patent was granted to the above company, the 23d March, 1839; May 25, 1840.

Truffaut, H., of Paris, represented at Mons by Accarian, rue de la Chaussée, No. 9, a patent of importation for 5 years, for an atmospheric motive power for the purpose of guiding balloons, also applicable to steering vessels, May 25, 1840.

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.

CANALS AND RAILROADS.

The French chambers have for some years past voted considerable sums annually for the improvement of the internal navigation of the kingdom. The sums voted for this purpose since 1836, amount to 160 millions of francs, and a new project of law has been brought forward for an additional sum of 23,400,000 frs. The *Commerce*, in a long article on this subject, objects to this continued expenditure of the public money on canals, at a time when that means of conveyance may probably be altogether superseded by railroads. "We fully admit," observes the *Commerce*, "the importance of canals in our system of internal communications, yet it is possible to exaggerate it; and we ought not to leave out of consideration the use that may be made of other new modes of communication, the immense utility of which we cannot at the present day appreciate." This observation refers particularly to the report of M. Chaix d'Est Ange, who, after comparing the utility of canals and railroads, concludes his report as follows: "Each of these means of communication has its advantages and its benefits—the one for passengers, the other for merchandise—this, for its extraordinary rapidity, which abridges time and distances; that, for cheapness; in which respect no other means of conveyance can compete with

it." "We must remark," continues the *Commerce*, "upon this report, that railroads have not only the advantage over canals as regards passengers, but, in certain cases, in the transport of merchandise also. Besides, it should be borne in mind that we have hitherto had but little experience respecting the carriage of goods on railroads. The application of railroads to that object has been scarcely organised in England or Belgium, and it already presents results that cannot be too much attended to."

The writer in the *Commerce* proceeds to point out the amount of traffic in carrying goods on different railroads in England and Belgium, where communications by canals exist on the same line, for the purpose of showing that railroad conveyance is, to a great extent, preferable for merchandise as well as for passengers. "It must not be supposed," he continues, "from these arguments and examples, that we wish to make a systematic opposition to canals. There are commodities for the conveyance of which railroads will never be preferred; such as those which occupy much space, or are of great weight, and yet possess little value. What we have desired to prove is, that in a great many cases, railroads would be preferred to canals, even for the transport of merchandise; and that, consequently, it is necessary to bear this fact in mind in the appropriation of money for improving the communications throughout the country. It is certain that railroads have encroached upon the domain of canals, and it would be more advantageous at present to form a railway upon a line on which, before these new modes of conveyance were known, it was intended to make a canal. These observations we consider necessary for the purpose of removing the impression conveyed in the report of M. Chaix d'Est Ange, and to combat the notion, which is already too general, that railroads are fitted exclusively for the conveyance of passengers."

THE RESISTANCE OF DIFFERENT KINDS OF WOOD.

The following experiments on the resistance offered by different kinds of wood were made with reference to their employment in paving streets. It will be seen that in employing oak, four square inches, resting on the ground and supported on all sides, are capable of bearing a weight about 33,000 lbs., and a heavy wagon is not more than one half that weight, consequently the wood is fully equal to bear any pressure that it is likely to sustain. Mr. Hodgkinson has made several trials upon cylinders of wood, an inch in diameter, and two inches long, with a powerful apparatus, consisting of two pressing surfaces, moving perfectly parallel, and exerting the pressure in the direction of the fibres of the wood. The cylinders broke, by splitting outwards at a certain angle, which varied according to the nature of the substance acted on, as in the case with cast-iron and other bodies; which shows that the resistance in all solid bodies is directly according to their breadth.

The following are the principal results of these experiments, in which the average resistance of the woods is estimated in pounds weight.

Poplar, imperfectly dried	2,440 lbs.
Moist Plum, cut two years	2,514
Dry Poplar	3,650
Yellow Pine	4,306
Cedar	4,456
Red Fir	4,605
English Oak	4,891
Birch	5,958
Ash	6,550
Dry English Oak	7,027
Box, cut one month	7,277
Drier Box	7,355
Dry Plum	8,241

BELGIUM.

The Society of Emulation, established at Liege in 1779, for the encouragement of science, literature, and the arts, but which since the events of 1830 had ceased its literary labors, is about to recommence them with increased activity. A public meeting of the society is announced for December next, which, according to the rules of the institution, will be occupied with the report of the secretary on the labors of the four committees, with lectures authorised by the council, the analysis of successful works, the distribution of prizes, rewards, and encouragements, and the announcement of the questions for which prizes are to be given in the following year.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

LONDON AND BLACKWALL RAILWAY.—We have always been impressed with the commercial importance of this undertaking, but after the company obtained their Act of Parliament we confess that we partly lost sight of it. We were, however, glad to find, on inquiry the other day, that the line had progressed so far that it will be open for passengers about the middle of next month, from the terminus in the Minories to Blackwall, and then the company will commence one profitable branch of their business. Trains will start from each end every quarter of an hour; the distance will be performed in ten minutes by the aid of powerful stationary engines; there will be four stations on the line; but the carriages are so constructed that they can be detached without the necessity of stopping the whole train. A very judicious arrangement has also been made for having a station at the two entrances to the West India Docks, as much time is now lost, and inconvenience experienced, when a merchant's business compels him to inspect goods at the extremities of the warehouses.

It is calculated that the passenger traffic will immediately be very considerable; for, in addition to that which will naturally be removed from its present course, steam-packets to and from Gravesend, Woolwich, and other places, will arrive and depart from the spacious wharf of the East India Dock Company, which forms part of the terminus on the bank at Blackwall. The difficulties and accidents which occur from steamers navigating the Pool are unfortunately too notorious; but the extent of compensation privately paid by the companies for damage done has been to a considerable extent, and known only to a few; hence, it is thought that the foreign steamers and most others will find it to be to their interest to make Blackwall their place of departure and arrival, and render it unnecessary for the Legislature to make it compulsory, which has frequently been suggested for the public safety in the navigation of the Pool. It is calculated that the Gravesend boats will save nearly an hour in time by this arrangement (and other packets in proportion), and the passengers from London fully half an hour,—circumstances of vast importance in short distances; it is also presumed that the fares of the steamers will be reduced in proportion to their saving of expenses, so that the public will have to pay little, if any, extra cost for the improved conveniences.—*Public Ledger*.

GREAT NORTH OF ENGLAND RAILWAY.—The depots and other buildings to be erected, adjoining to the line of the Great North of England Railway, at Northallerton and East Cowton, were contracted for on Tuesday evening, by Mr. Robson, an eminent builder from Northumberland. The works are to be proceeded with immediately. It is understood that the depots, &c., at York, Aire, and near Thirsk, are also contracted for.

The Second Report of Sir Frederick Smith and Professor Barlow, the commissioners appointed to investigate and report upon the competing railway projects to Ireland and Scotland, was laid on the

table of the House of Commons on Monday last, and was ordered to be printed. It contains the opinion of the commissioners on the line between Lancaster and Carlisle, which is understood to be in favor of the inland line by Kirkby Lonsdale and the valley of the Lune to Penrith, and thence to Carlisle. Notwithstanding, however, that a line has thus been selected for the communication to Scotland, the House of Commons, on Wednesday night, on the motion of Lord Viscount Lowther, voted an address to the crown, praying that the commissioners should be instructed to inspect and report upon the line to which we alluded last week as having been recently discovered by the engineers and surveyors of the Kendal committee. The motion runs thus:—"Resolved, That an humble address be presented to her Majesty, that she will be graciously pleased to give directions to the committee appointed by Treasury minute, to include within their report a new line which has been discovered between Carlisle and Lancaster, by which a portion of two lines, called the Kendal and Lne Lines, will be united, giving the town of Kendal the advantage of the railway passing near it, and probably lessening the expense between Lancaster and Carlisle." This resolution certainly comes somewhat late, but should it delay the final settlement of the question, the fault will not rest with the commissioners. Every one would have justly condemned them, had they taken upon themselves the responsibility of examining a line which was not included within the scope of their instructions.—*Railway Times*.

SOUTHAMPTON RAILWAY.—Great preparations are making by the inhabitants of Southampton to celebrate the completion of the railway by a grand *fête* at the Archery Grounds, which the chief inhabitants of the town have engaged, and are fitting up in a superb style. The members of the Royal Family are invited, and much anxiety is felt by the town to make the gala worthy of the occasion. The day talked of is Tuesday, the 9th June.

LONDON AND BIRMINGHAM RAILWAY.—The traffic upon this line during last week, as given in the *Railway Times* of Saturday, amounted to no less a sum than £14,703 17s. 7d.

BIRMINGHAM AND GLOUCESTER RAILWAY.—We can now confidently state that the Birmingham and Gloucester Railroad will be opened on or before the 1st of July next, from Barnt Green, seven miles from this town, to Cheltenham. Conveyances will be furnished by the Company to perform the intermediate distance; and by the end of the year it is fully calculated that the whole line will be completed, and opened to the public from Birmingham to Cheltenham.—*Midland Counties' Herald*.

MIDLAND COUNTIES RAILWAY.—Amongst the many advantages which this line will afford to Leicester and its vicinity, there is a prospect of a supply of useful coal from Derbyshire at low prices. By the courtesy of the secretary of the railway, we have received a specimen of a supply brought by the first train of coals that has traversed the railway, and can testify to the quality being such as to render it useful for household and other purposes. The specimen we have received is from the colliery of Messrs. George Stephenson and Co., at Clay Cross, near Chesterfield, and we understand that it can be sold in Leicester at 1ls. a ton. It is now selling in Derby at 8s. 6d., and the railway carriage from there is estimated not to exceed 2s. 6d.—*Leicester Journal*.

MIDLAND COUNTIES RAILWAY.—On Thursday the Directors placed the third class carriages on the Leicester and Nottingham Line, by which passengers are conveyed the whole distance for 2s., and shorter stages in proportion. We are glad to find that the business on this railway is steadily and satisfactorily progressing; and we look forward with anxious anticipation to the opening of the whole line to Rugby in the month of June.—*Ibid.*

GOSPORT JUNCTION RAILWAY.—This line is to unite the Southampton Railway with Gosport, 15½ miles long, capital £300,000. A feature of it, not gene-

rally known, is, that from three months after passing the Act, until the like period after the completion of the line, the South-western shareholders guarantee to the Gosport shareholders five per cent. interest, and at the end of this period they may choose either to receive the same interest in perpetuity, or participate equally with the South-western shareholders in the profits of this undertaking.

MANCHESTER AND BIRMINGHAM RAILWAY.—The exertions of the various contractors, on this line of railway, at the temporary Manchester terminus, in Travis Street, London Road, have, for the last four or five weeks, been quite astonishing. Since the 1st of April, no fewer than six more arches, of thirty-three feet span, have been completed, besides another skew bridge. The magnitude, or rather the extent of the work, may in some measure be estimated, when it is stated that the arches and bridge have consumed nearly seven millions of bricks. The immense scaffolding or centering, rendered necessary for the erection of the iron skew bridge, which has so justly attracted public notice, has this week been removed, and this noble mechanical structure, which has certainly not its equal in the kingdom—perhaps not in the world, may now be seen to the best possible advantage. Mr. Buck, the company's engineer, has, it is said, the rare merit of designing this extraordinary work of art. The permanent rails are now in the course of being laid; the mode of doing which, presents to the eye of the scientific man a degree of firmness and probable durability not perhaps equalled, or even nearly approached, by any other railway line in the kingdom. The rails, remarkably heavy, are fifteen feet in length, and laid on longitudinal pieces of kyanised timber, the scantling of which is twelve inches by six inches. There are besides transverse pieces, also kyanised, ten inches by five inches, and screwed to the longitudinal ones every three feet, so that it may with safety be pronounced impossible that the rails, when once truly and firmly fixed in their chairs, can ever afterwards be other than completely parallel to each other; a circumstance that cannot fail to give a motion to the carriages so thoroughly easy and agreeable, as to bid defiance to all attempts at improvements on the plan. When the arches, now 110 in number, are extended to the intended permanent station, Piccadilly, near the Infirmary, the entire length of the viaduct on brick arches will exceed two miles; and the quantity of timber that will be consumed in laying the rails for this length only, will exceed 20,000 cubic feet. It is intended to open the railway, as far as Stockport, on the 29th inst.—*Manchester Chronicle*.

SOUTHAMPTON AND EXETER.—**TRAVELLING ARRANGEMENTS.**—A new coach has been placed on the road between Southampton and Exeter, for the purpose of bringing passengers from that place, and from Falmouth and Devonport, to the metropolis by this route. It arrives here every day in good time for the one o'clock train to London; and from the number of passengers it daily brings up, we should say it has proved very successful. We also hear that it is intended to quicken the speed of our numerous branch coaches, and in many cases to run the present pair-horse coaches with four horses. Omnibuses to and from the terminus have been successfully introduced by Mr. Matcham and Mr. Quick.

THE VALUE OF RAILWAYS.—It is difficult to estimate correctly the value of railways to the public, but it is obvious that they are beneficial in many different ways, and to a very great extent. Trade and commerce could not exist at all without the means of transport from place to place; and the more perfect those means become, that is, the cheaper and more rapid, the more must traffic of every kind be stimulated. That which brings raw materials and fuel to the manufacturer—which conveys merchandise to domestic and foreign consumer—which takes buyers to their markets and merchants to their customers—which brings food from purely agricultural districts to the masses of population—which transports manure, lime, implements, and building materials to the cultivator of the soil—which renders available mineral treasures that have been valueless from the difficulty of conveyance; that which effects all these important objects with the greatest despatch and economy, is calculated to advance the general prosperity of the country—of those who produce and those who consume—of the landowner, the farmer, the man of trade, and the laborer. But railways also produce social and moral advantages of a high order. By accelerating the diffusion of knowledge, they contribute to the growth of intelligence. By facilitating correspondence and intercourse, they promote moral as well as intellectual improvement. By the encouragement of travelling, they are conducive at once to health, to the refinement of taste, and to the removal of prejudices. They afford to the citizen many of the advantages of a country residence, and to the rural districts many of the advantages of the town. To promote objects of such

field, Belper, Alfreton, and Derby; and at the distance of a few miles are also the towns of Pontefract Doncaster, Tickhill, Bawtry, Worksop, Dronfield, Mansfield, Bakewell, Matlock, Wirksworth, and Ashbourne. The North Midland Railway will connect together the populous and wealthy districts employed in the woollen, the linen, and the cutlery manufactures of Yorkshire, and the hosiery, lace, and porcelain manufactures of Derby; and also, by means of the other railways joining it, will connect with the above the hardware manufactures of Birmingham, the hosiery and lace manufactures of Nottingham and Leicester, and the wool-growing districts of Leicestershire, Northamptonshire, and Warwickshire; and all these will have the most rapid and easy communication with London and the south and west of England. This railway passes in its entire length over a rich coal field, and skirts the mountain limestone of Derbyshire; and great quantities of these valuable minerals will doubtless be conveyed on the line, to the benefit alike of the landowner, the farmer, and the manufacturer. It has also the advantage of having through the greater part of its course no competition from canal navigation, there being no canal communication between Leeds and London but by the circuitous route of Manchester. The entire length of the North Midland Railway, from Leeds to Derby, will be 72½ miles. The space between Leeds and Rotherham, which is 32½ miles, is expected to be completed in about six weeks from the present time, that is, at the end of June or the beginning of July. At that time the whole railway will be opened, with something of the éclat which is fitting on the completion of so grand and useful an undertaking.—*Leeds Mercury*.

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high national importance, many millions of capital have been worthily expended in the British Isles; and the results will in most cases be beneficial to the spirited persons who have engaged in these works, as well as redound to the national benefit, not only in the present age, but through all future time.—*Leeds Mercury.*

DUBLIN AND DROGHEDA RAILWAY.—A bill is now before parliament at the instance of this company, which has been introduced by Mr. O'Connell and Mr. George Evans, the object of which is to vary some of the provisions of the acts already passed which relate to it. The capital of the company has hitherto been £600,000., in shares of £100; but it is now proposed to limit the capital to £450,000., and to convert the present shares into shares of £75, each; and it is also proposed to allow the directors to borrow at once, from the Exchequer Loan Commissioners, the sum of £200,000., instead of, as originally enacted, £150,000.; this loan to take precedence of that which they are entitled to effect under their former acts, by way of mortgage. Another object of the bill is, to empower the directors to pay five per cent. interest on the capital paid up, and as soon as £20. a share are paid up, to pay six per cent. on money paid in advance of calls. The compulsory purchase of land is to be extended to two, and the completion of the railway to seven years after the passing of this bill. Provision is also made for securing the drainage of the north lots, and for preserving the communication through the lots as now enjoyed, for permitting the flow of the tide in the Estuary of Clontarf, and for preserving the carriage-road on the East Quay wall, and also its wall from injury.—*Dublin Monitor.*

RAILWAY COMPENSATION.—The *Railway Times* of Saturday gives particulars of two cases of compensation recently decided, in one of which the claim was £1,500, and the award of the jury £300; and, in the other, the claim was £3,600, and the award £390.

RAILROAD BETWEEN PARIS AND ROUEN.—The Minister of Public Works presented to the Chamber of Deputies on Saturday last, a bill for the construction of a railroad between Paris and Rouen. The company by which it is to be executed had declined extending it as far as Havre, although strongly urged to do so by the Government. The whole costs of the work are estimated at 50,000,000f. The Government is to purchase shares to the amount of 7,000,000f., and to lend a similar sum to the company. The Minister announced that several English capitalists were interested in the undertaking, and that the state would have a mortgage on the road as a security for the reimbursement of its advances.

MEUSE.—The works on the railway of the Meuse had commenced on only one point at the beginning of December last, but since that time they have proceeded with such vigor as to show that the managers are determined to make up by continued activity for the preceding delay on this important line. At present, the cuttings and embankments are proceeding at twenty-five different points. All the tunnels have been commenced. The three shafts for that of Halensart, 580 metres long (about 1,900 feet) have been sunk to the depth of 45 metres. Considering the season when the works commenced, the small number of workmen employed, the engineering difficulties presented by the nature of the country, and the hardness of the rocks in some places, it must be admitted that the works now present the most satisfactory results.

THE PICTORIAL POSTAGE ENVELOPE.

To the Editor of the "Glasgow Courier."

SIR,—I have the pleasure of Mr. Mulready's acquaintance, and have, in common with others of his friends, complimented him upon the talent he has displayed in the design of the post covers; but I found it a subject which he is sorely vexed at, and of which he protests being quite innocent of. It

would indeed seem that he has had nothing to do with the design, more than having brought it into a reduced scale; for the whole has been forced upon him from the Treasury, with the assurance that the invention of the drawing being that of a lady high in station, left him no alternative but to submit to have himself published as its author.

I do think you owe this artist some reparation for your severe remarks, by stating this fact to your readers.

I am, Sir, your very obedient servant,
JAMES MACKENZIE, jun.

5, Grosvenor Gate, Park-lane, May 13, 1840.

[Mr. Mulready's friend may be assured that we could not mean to wound the feelings of that gentleman by any remarks we might make on the pictorial letter-cover, seeing that Mr. Mulready is a perfect stranger to us. If Mr. Mulready, who we now understand to be an academician, and a person of distinction in his profession, has been obliged to adopt the progeny of a lady of rank, the sooner he renounces the functions thus forced upon him the better, since he can gain no credit by the assumed paternity of one of the silliest sketches we ever saw.—Ed. G. C.]

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
Bogota	Denmark	Nevia
Bahamas	Dominica	New Brunswick
Barbadoes	France	Newfoundland
Berbice	Gibraltar	Nova Scotia
Bermuda	Greece	Quebec
Brazil	Grenada (New)	Spain via Cadiz
Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburgh	St. Kitts
Canada	Heilsgoland	St. Lucia
Caraccas	Honduras	St. Vincent's
Carthagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Columbia	Lagunayra	Trinidad
Corfu	Malta	Zante
Cuxhaven		

It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsagents, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 10, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"G. G. Bennett," Manchester.—The time allowed for enrolling the specification of a patent in England only, is two months; but if the inventor states in his affidavit that he intends to apply for patents for Scotland and Ireland, then six months are granted.

"Thomas Betts."—The Court of Chancery could alone assist you.

"A Constant Reader."—Not in the least. The caret will only entitle him to notice; it will afford him no protection.

"John Johnson," Canterbury.—Yes; the invention is certainly valuable, and we should say it is likely to be extensively useful.

"R. Rutten."—Your case is under consideration. We will write by post on Tuesday.

"E. W."—The act was passed last session, and may be procured at the "Queen's Printing Office."

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSOON CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE
INVENTORS' ADVOCATE,
AND
JOURNAL OF INDUSTRY.

SATURDAY, JUNE 6, 1840.

There is no improvement in modern science, the practical importance of which is so great in its present effects, and still more in its future consequences, as the application of the power of steam to locomotion on railways. The distances between our principal commercial and manufacturing towns are, by this means, already diminished, in point of time, at least two-thirds, and the whole empire will shortly be concentrated within a few hours' journey. It is almost impossible to calculate the effects which this general approximation of the different interests of the country will produce on the prosperity of the nation, and on the face of society. It is a subject which deserves the best consideration of the government; for the importance of railway communication, in a national point of view, cannot be much longer overlooked.

It is now about ten years since the practicability of this means of communication was successfully established on the Liverpool and Manchester railway, and the results were as astonishing to the engineers engaged as to the public. The speed attained by locomotive engines far surpassed the most sanguine expectations of the projectors, and when the

possibility of maintaining a velocity of thirty miles an hour without greater danger than arises from travelling in a stage coach was proved by experience, the great advantages to be derived from such a means of travelling became apparent, and a kind of railroad mania possessed the whole country.

One of the principal advantages that suggested itself as likely to arise from this application of steam power, of nearly equal importance with the quickness of communication, was its anticipated cheapness. The great saving which was known to be derived by the substitution of steam for animal power in other kinds of machinery, naturally excited the expectation that similar effects would be produced on its application to railway carriages. When it was found, too, that a single engine, managed by two men, was able to propel several hundred passengers over the line, these expectations became apparently realised, and the fares at first charged were considered to be merely "fancy prices," justifiable on the first getting into action of an entirely new machinery. It was anticipated that when the novelty was over, and the extra expenses incident on experiments, and on the imperfection of new machinery, had been defrayed, and the whole management had been put in regular working order, the public would experience the full benefit of the cheaper means of locomotion.

We regret to find that this natural expectation has not been realised to anything like the extent it ought to be, and the charges for conveyance by railways, on many of the lines, are but a fraction lower than the former charges by stage-coaches. This ought not to be allowed. If the Government of this country, unlike the Governments of any other country in which railroads have been formed, choose to delegate the duty of establishing the means of conveyance to private individuals, it should at any rate, in so doing, guard the interests of the public from suffering by the private monopolies, which are thus constituted. It is true that the House of Commons has passed a resolution, declaring all railways for the formation of which Acts of Parliament were hereafter to be granted, subject to future regulations to be imposed by Parliament, but the most important lines of communication will not be liable to these regulations, and the public possess no legal protection against exorbitant charges in those instances. We know that there exists in many minds so strong a dislike of what are termed *ex post facto* laws, that the bare suggestion of passing a law to restrict the privi-

leges conferred by a former Act of Parliament would be scouted as an infringement of established rights by an *ex post facto* law. But these abstract notions must give way when the public good requires it, and we contend that Acts of Parliament for the construction and management of railways are liable, like all other Acts of Parliament, to subsequent revision and amendment. If, therefore, the railway companies, after having established a monopoly for the conveyances of passengers between the principal towns in the Kingdom should continue to extort from the public higher rates than are sufficient to afford a reasonable profit to the shareholders, the legislature would not only be justified, but would be imperatively bound, in the discharge of its duties, to interfere. No one, we believe, disputes the right of Parliament to impose taxes in any shape, though new or additional taxation frequently operates most injuriously on individual interests, and in their practical effects are nothing less than *ex post facto* laws. We cannot perceive the difference, therefore, in effect, between the exercise of the admitted power of imposing a tax on railways, for the increase of the revenue, and interference, to protect the public from exorbitant charges. We do not, however, wish any unnecessary interference with these great public undertakings, and we hope that it may be rendered unnecessary by more liberal and disinterested conduct on the part of the Railway Directors. They should take an enlarged view of the duties of the important and responsible offices they exercise, and not imagine that their only business is to secure the greatest possible amount of dividends for the shareholders. The Directors should consider that they are exercising a two-fold office, and that the interests of the country, as well as of the shareholders, are involved in the management of railroads. We will not at present particularise the railroads to which the objections we have urged more especially apply; we believe, indeed, that the charges on all the railroads in England are higher than they ought to be, and that they exceed those of any other country. Our object now is, to call attention to the fact, that one of the great advantages anticipated from railway conveyance has not been realised to the extent that the public have a right to expect; and to remind the directors that one of the principal grounds on which the Acts of Parliament, conferring on them exclusive privileges, were passed, was, that these undertakings would be beneficial to the public.

ON THE CAUSE OF WINDS.

The motions of the atmosphere near the surface of the earth, are usually attributed to the expansion of the air by the heat of the sun. That portion of the air which is more immediately acted on by the sun's rays becomes specifically lighter than the colder air of other portions of the atmosphere, and it is usually supposed that the lighter air ascends, or is forced upwards by the heavier and less heated air which surrounds it. The rushing in of the denser air to occupy the place of that which ascends, is generally said to be the immediate cause of the disturbances of the atmosphere.

In our opinion, however, the motions of the air are principally, if not wholly, produced, not by the expansion of the air directly, but by the subsequent contraction of it, when the heat of the sun is removed. We question, indeed, whether the direct effect of heating any large expanse of atmosphere, near the surface of the earth would be the ascent of that stratum of air to a higher elevation. The heat would, it is true, cause the air to expand, and as the expansion could only take place upwards, the lower and heated stratum would be of greater depth than before. The consequence of this action, it might therefore be supposed, would be to force by expansion a volume of air from the heated portion of the earth, instead of creating a partial vacuum there, and causing the colder air to rush in to supply its place. The upper portion of the heated stratum, however, it may be supposed, as it expands into the higher and colder regions of the atmosphere contracts, and thereby produces a constant partial vacuum, even whilst the rays of the sun are exerting their influence on that portion of the atmosphere. The greatest effects we conceive are, however, produced when the direct heat of the sun is removed. The change in the density of the air, near the surface, from its heated state during the day, to its contracted state in the night, must frequently exceed 40 degrees of Fahrenheit, therefore it would in the night time be contracted about one-twelfth of its whole volume. This contraction, by the diminution of heat in the night time, is quite sufficient to account for the constant current of air towards the tropics, without supposing any partial vacuum to be directly caused by the diminution of the specific gravity of the air by heat.

It may, indeed, be supposed that there is little difference between the explanation we

have now given of the cause of winds, and that usually assigned, as the heat of the sun is in both assumed to be the moving power. There is, however, a material distinction to be observed, for, to express it in common language, one theory ascribes the motions of the air directly to heat, the other to cold. In the one case, it is supposed that the air rises and produces a partial vacuum, in consequence of being made specifically lighter by heat; the other attributes no sensible effect to the heated air, so long as it retains its heat, but supposes the partial vacuum to be produced by contraction of the air as it cools. Were the sun to remain stationary over one point, the winds would, according to the former theory, still continue to blow towards that point, but in the theory we have suggested, the alternations of day and night is the principal cause of the disturbance in the equilibrium of the atmosphere.

NEW INVENTIONS.

IMPROVEMENTS IN LOCOMOTIVE BOILERS.

The great degree of perfection which locomotive engines have attained, may be attributed entirely to the tubular boilers; but a great inconvenience attends this admirable invention, which experience has not yet overcome; we allude to the leakages so frequently produced at the rings or ferrules, used to fix the tubes to the plates of the boiler. In order to form an idea of the importance of this question it need only be observed that on the St. Germain Railway, during one month, out of 26 engines that were sent to the engineer's to be repaired, 24 were sent in consequence of leakage at the ferrules.

It must be understood, that owing to the alternation of heat and cold, the substances of the tubes and the boilers not being of the same metal, undergo alterations in their expansion, but in different degrees. These elongations and shrinkings are unequal, the brass tubes (*tubes de cuivre jaune*) are lengthened by heat more than the iron boiler, and tend therefore to push out the rings.

The method hitherto adopted of repairing the damage, occasions a rapid destruction; for every time that the old ferrules are replaced by others of larger diameter, the holes of boiler plates are also enlarged, the tubes becoming thinner soon burst, and it becomes necessary to change the tubes of a boiler for others of a larger diameter. This is the cause of the principal expense, perhaps of all the considerable expences, of keeping the engines in repair.

Struck with these inconveniences, M. Henry studied the question with a view to find a remedy for them, and has to all appearance completely succeeded. He has completed, by many ingenious contrivances a stuffing-box, which may be made tight by the pressure of the steam in the boiler, by the longitudinal and diametrical dilations of the tubes, or may be tightened either by conical rings, or by cylindrical rings and a screw key.

But the most ingenious parts of this invention, appear to be the employment of amianthus, which is used in the stuffing-box instead of hemp, and the slight curvature that is given to the tubes; the use of which bend is to avoid the effect of elongation tending to push out the rings. A patent has been taken out by M. Henry for this invention.—*Monitor Industrial.*

NEW ENGINE AND PROPELLERS FOR CANAL NAVIGATION.

Mr. Peter Taylor, of Hollinwood, has recently taken out patents for two inventions—one for a rotary high-pressure marine steam-engine on a new principle; and the other, that which chiefly calls for notice, for paddles or propellers, also of an entirely new construction. His principal object was to attain that *desideratum* in steam navigation on canals, sufficient motive power for considerable speed, without the injury to the canal banks caused by the action of the ordinary paddles. The apparatus consists of a series of vanes or curved blades, placed obliquely, like the sails of a windmill, or like portions of a continuous screw. The apparatus is placed at the stern of the vessel in a small enclosure of water, the sides of the boat being continued beyond the stern, and the rudder being fixed beyond the propellers. They occupy a space of about a yard and a half in length, and, in the instance under notice, seven feet in breadth. There are two parallel axes or shafts, which project from the stern, each shaft having four pairs of vanes or blades, at short distances, and so placed as to strike the water in quick succession, and obliquely, like the scull of a boat. The oars or blades on one shaft have an action like that of a right-hand screw, and those of the other like that of a left hand one; and the vanes of each shaft work nearly up to the other shaft, and thus their joint action has the effect of propelling the boat forward, or when reversed, by altering the motion of the driving-wheel, in a direction stern first. They are said to differ (amongst other respects) from all propellers previously invented, both in their screw-like action, and in the axles being wholly under water. By way of trying experiments with these propellers, Mr. Taylor has had a set of them fitted to an old iron boat, about fifty-two feet in length, and seven feet in width, formerly worked on the canals by Messrs. Buckley, Kershaw, and Co. One of Mr. Taylor's new rotary engines of only five horses' power has been fitted into the boat, which has been named "The Experiment of Hollinwood." After several private trials, this boat made its first experimental trip on the river Irwell, yesterday week. Mr. Taylor and a few friends proceeded from the Old Quay, Manchester, as far as Barton-on-Irwell, and on the whole they state that the action of both engine and propellers was satisfactory; though in returning there was a deficiency of steam, from the filling-up of the fire-tube with coke; a casualty which was remedied as soon as discovered. The speed was regarded as in a high degree satisfactory; being, it is stated, generally at the rate of six, and occasionally seven miles an hour. The motive power was deemed inadequate to accomplish all that the inventor had a right to anticipate; but it is mentioned as one proof of the superiority of his inventions, that the *Jack Sharp*, a passage boat belonging to the Old Quay Company, (whose first trip, after being fitted with engine and stern-paddles, we noticed some time ago,) was not at all able to keep up with the *Experiment*, though the engine of the former is twelve horses', and that of the latter is only five horses' power.

On Wednesday the *Experiment* steamed down to Runcorn, by river and canal, and the whole distance was accomplished in about five hours' working; including the stoppages at the locks, and those caused by the parties on the boat having themselves to open the bridges on the Runcorn Canal. The boat stopped a short time at Barton, and several hours at Warrington, which place it did not leave till dark, and performed the distance between Warrington and Runcorn, (which, it is said, is about seven miles and three quarters) in about an hour, including delays from the cause just noticed. This increased rate was attributed to having obtained a better description of coke at Warrington. The boat remained at Runcorn for some hours, and, having so far performed her work to the satisfaction of the voyagers, they determined to proceed in her to Liverpool. They started from Runcorn at half-past three o'clock on Thursday

morning, with the tide, and reached the Rock Ferry, opposite Liverpool, by five o'clock, performing the distance in about an hour and a half. The *Experiment* is considered to be by no means well adapted for the purposes of canal steam navigation. She is described as in form more like a box than a boat, and as drawing two feet nine inches water; a manifest disadvantage with so small an engine. We are informed, that all who have seen the boat's performance, including several engineers who took a trip in her, have expressed themselves much pleased with her speed and general action. We understand there is some probability of the Old Quay Company making a trial of the propellers and engine in one of their twin quick passage boats on the Runcorn Canal. The *Experiment*, in these trips, was placed under the care of Isaac Taylor, an experienced captain in the Old Quay Company's employ, the aid of whose services, as pilot and steersman, was afforded for the occasion by Mr. T. O. Lingard. Taylor says the boat answers her helm readily, turns well, and is very manageable. When at her greatest speed, it was found that the agitation and swell caused by her passing through the water, and by the propellers, had very little effect on the canal boats, the stream from the propellers being thrown off in the centre of the canal, leaving a considerable wake there.—*Manchester Guardian.*

NEW FIRE ESCAPE.

A novel and ingenious mode of rescuing persons from destruction by fire, the invention of Mr. Hawkins, the cashier of the County Fire Office, was a few days since exhibited from the house of Mr. Humphrey, in Marylebone-street, Regent-street, opposite the premises of Mr. Clark, where the calamitous fire and loss of two lives recently occurred; and gave great satisfaction to some hundreds of persons who witnessed the experiment. It consists simply of three strong ropes, each 20 yards (60 feet) in length. At one end of each rope, is a strong spring joint, by which, one being carried to an upper window of the adjoining house on each side of a burning building, and the jointed end cast into the street, they can be instantly jointed together, and with the third rope left below, which acts as a guide line, by which the two ropes on being pulled up from above can be directed across any window of the house on fire, at which assistance is needed, the guide rope also enabling the persons in the street to pull the party descending away from the flames to the extent of the opposite side of the street. A belt, or open bag, can also be easily added to the spring joints, by which females and children may descend with perfect safety. One of the firemen descended six times in less than that number of minutes. The contrivance is so simple, and so easy of accomplishment, that we doubt not it will be generally adopted. We understand the engines of that company will in future be always provided with it.

FELT CLOTH.

The attention of the public has been already drawn to this new manufacture, but few persons, we believe, are aware that it has been brought to the beautiful state in which it is now finished. We have in our office, for general inspection, four specimens of various colors, which will astonish all who may view them. Two pieces are in blue, one in brown, and the other in a drab, closely imitating the finest kerseymer. The gentleman who originated and perfected this manufacture, is, we are informed, an American, of the name of Wilkinson; a few weeks ago he visited Manchester, dressed in felt cloth, his coat, including trimmings, not weighing more than two pounds. It will be seen that cloth of the finest texture and most brilliant color, strong, elastic, and durable, can be manufactured by Mr. Wilkinson's process: and such is the facility with which it can be made, that thousands of yards may be manufactured within the time now required.

for finishing so many hundreds. A company is formed to carry out this wonderful invention, and measures are now in progress for the appointment of a directory in Leeds, where Mr. Wilkinson resides. The manufacture is mainly produced by pressure, and the machinery is such as may be placed with advantage in factories that have been used for other purposes. It is expected that the company will be in active work in about two months hence. It may seem extravagant to hazard such a prediction; but if cloth can be manufactured of the quality of that now lying at our office, and at a price much below that of woollen woven cloths, we feel convinced that the felt cloth will, in a very short period of time, as completely supersede woollen wovens, as railway coaches have superseded coaches on turnpike roads. A great change in one most important branch of British manufacture is therefore a hand.—*Manchester Times.*

ON CENTRIFUGAL FORCE.

To the Editor of the "Inventors' Advocate."

SIR,—In your two last numbers, two articles have appeared, attacking the laws of my invention; one from R. P., which appeared simultaneously with my last letter; and one from yourself, in which you reply to R. P., as well as to my last communication.

In both these articles, grievous errors on the laws of mechanics are taught; as well as an erroneous observation on a sentiment or argument which appeared in my last letter, which I think it necessary to correct at once.

For these reasons, and the important principle which you are pleased to acknowledge to be involved in this question, perhaps you will again favor me with portion of your valuable columns, through which I may correct the charge made against myself, and point out the errors in mechanics taught in both these articles.

The charge made against me is a "plan evidently hastily conceived, of reversing the effect of centrifugal reaction, by changing the direction of the tube from which the water is thrown out." Now I am at a loss to comprehend how you could consider this a hastily conceived plan, appearing in my last letter, as I had related in a previous letter, the details of an experiment which I made on this very point of reaction; nor was this an unnatural experiment, for reaction is the only argument advanced in your first article against the working of my engine; but as no reaction could be discovered, of course I shall not find it necessary to make an arrangement to take advantage of that which has no existence.

In replying to my last letter, you consider the experiment made by Mr. Graham with pendulous bodies not applicable to the present question. In this, Sir, you differ not only from myself, but also from Sir Isaac Newton, who makes use of this experiment made by Mr. Graham, in answering his opponents, showing that a double power produces a double velocity in bodies moving in lines, both curved and straight. It is now evident that you are directly at issue with this great author, from whose theory I will show, in opposition to both your last articles, that in deflecting a body moving in a straight path to a curved one, there is no loss of power whatever. In answering his opponents he says, on the contrary, many instances might be given where a force is employed in producing a change in the direction of a motion of a body only, without either accelerating or retarding it. The force that is sufficient to carry a body upwards in the perpendicular, to the horizon, to a double distance from the centre of the earth, is equal to that which, impressed in a horizontal direction, would carry it in a circle about the earth for ever, abstracting from the resistance of the air, as appears from the theory of gravity; and yet the first would overcome the resistance arising from the gravity of the body for a certain time only, whereas the other

would overcome the resistance for ever, without any diminution of motion. In the first case, the gravity of the body would act directly against its force; in the second, it would act in a line perpendicular to the direction of its motion: in the first case, the action of gravity is entirely employed in consuming the force of the body; in the other, in changing its direction only." Now, surely, Sir, this is to the point, and shows, if this author's theory is correct, that in deflecting a body into a curved path, there is no loss of power whatever.

You appear to feel an abhorrence at the charge of being found in opposition to the present generally received theory of the universe; and yet any one of the objections which you have advanced against the working of my engine, if you could establish it, would overthrow the Newtonian system.

First, if any reaction occurred in bodies receding from the centre of motion, this would destroy the motion of the planets in their orbits, for they are alternately approaching to and receding from the centre of motion, and there is, consequently, an alternate increase and decrease of centrifugal force.

Second, if there is no such thing as centrifugal force as you "contend," and if what is called centrifugal force, or the outward pressure of revolving bodies, does not act in the line of the "radius;" then pray what has counteracted centripetal force, or gravity, for so many thousands of years, and prevented the return of the planets to the centre of motion, almost immediately after their first projection? If you can establish any other cause but centrifugal force, and if this force does not act directly in the line of the "radius," then you overthrow the Newtonian system. I need not occupy your space with the other minor points, this is enough, while waiting your distinct answer to this question, I will appeal to the colleges of England, to the scientific institutions, to the instructors of the youths of the nation, to civilised Europe,—be prepared for the answer, a new system of the universe must be the result, for from the one you now receive and teach proceeds the greatest power in nature; the matter is of vast importance, be prepared for the change, or for the contest: hold not back, I call upon you in the name of society; speak now, or over after hold your peace.

Allow me now, Sir, to make a few observations on the remarks and doctrine of R. P.

I think it will appear evident to every person who will peruse the article of R. P., which appeared simultaneously with my last letter, that we agree perfectly on centrifugal force, therefore he cannot charge me with having expounded it incorrectly. The only point which R. P. attacks is that of a double power producing a double velocity.

I will now show that the doctrine of R. P. on this point is grievously erroneous, contrary to every day experience, and to the plainest rules of mechanics; for in illustrating his argument, he has rendered a standing rule true and false at one and the same time; showing that the power necessary to urge a fly-wheel from a state of rest up to a velocity of, say 32 feet per sec. is equal to the power represented by the weight of the wheel moving through the space of 16 feet, that is, through the half of the velocity; but that the power necessary to urge the same fly-wheel to a velocity of 64 feet per sec., is equal to the same weight passing through a space of 64 feet, that is the whole of the velocity. Now, that it may be seen how absurd is this doctrine; suppose R. P. had commenced his problem by stating, that the power necessary to urge a fly-wheel from a state of rest up to a velocity of, say 64 feet per sec., would he not have said that it is equal to the power represented by the weight of the wheel moving through the space of 32 feet, the half of the velocity. R. P.'s illustration depends on the velocity with which he begins his problem; can R. P. point out what is the beginning of velocity; will he be pleased to work his problem again his own way, commencing by urging the wheel to a velocity of 16 feet per sec., then double the velocity, and let us know what represents the

power required: I will wait for the answer, for it is very interesting.

R. P. in the concluding part of his article, has indulged a flight of fancy into boundless space, at the sacrifice of argument and correct reasoning. It is true if R. P. could make his way to the sun, and extend arms to the various bodies in the solar system, he might by a giant's exercise of power double or quadruple the velocity of these bodies in their orbits, and whirl them off into unfathomable space; and this would prove the correctness of the system I have laid down, and not disprove it.

The Almighty Creator of the Universe has projected the various bodies in the system with such velocities, and at such distances from the centre of motion, as suit their various densities, so that centripetal force and centrifugal force, are for ever counteracting each other; and an infinite wisdom has so ordered, that no finite creatures shall have it in their power to disturb or increase their motions. Such is not the case with systems of our own construction; we can double or quadruple their velocities as often as we please, and yet have no effect on the solar system; the remarks of R. P. are, therefore, inapplicable.

Relative to the change of the direction of the water, R. P. is correct; but the loss on this account is trifling compared with the centrifugal pressures acting on the pistons; besides, I am not confined to pistons and cylinders; I can work a rotary apparatus, by which the direction of the water is not at all changed.

R. P. errs in supposing that centrifugal force is available after the body is discharged from the engine. The instant the connection of the body with the engine is destroyed, the centrifugal force is lost; the force of the body with its tangent motion only is then available.

The error which R. P. has fallen into, when he states that I always require the use of my quadruple power, in urging the same quantity of matter, from rest up to a double velocity, is caused by the erroneous manner in which he has worked his own problem with the fly-wheel; when he corrects himself on this point, he will correct himself on the other also. With other details I cannot venture to occupy your valuable space at present, but will subscribe myself, Sir,

Your obliged servant and well-wisher,
S. CARSON.

4, King's Row, Pimlico, June 3d, 1840.

[We scarcely know how to deal with Mr. Carson's letter, which was received at so late an hour that we have neither time nor space to answer his charge against us, for wishing to overturn the system of the universe. He has invoked so many powerful spirits to rise up and assist him, that it will, perhaps, be more prudent to reserve our strength for this threatened attack.]

To the Editor of the "Inventors' Advocate."

SIR,—In answer to your article of last Saturday, I submit the following remarks.

1st. Centrifugal force is that force alone, by which bodies in motion recede from the centre of the system around which they revolve. So long as the bodies remain in connection with the system, this force can only act in the direction of the radii—and even for a short time after they leave the system at a tangent, their position will be in the line of a radius produced through that point of the circle at which they would have arrived had they continued to revolve. The steam-engine governor is a living (?) example of this, as the balls rise and fall, as the velocity varies without having any inclination to leave the vertical plane in which they are suspended.

See Hutton's Mathematical Dictionary, ("Centrifugal.")

2d. Although your demonstration is clear, that there is a loss of power in altering the motion of a body from one straight line to another; yet it is

not so from one part of the same curve to another. I quote Playfair's demonstration of this,—see his "Elements" articles 200, 201, and Corollary.

"Although a body moving over a series of inclined planes, loses a portion of its velocity at every change of inclination, proportional to the versed sine of that inclination, yet the number of planes may be so increased, and their inclination to each other so diminished, that although the angle contained between the first and last be ever so great, the sum of the versed sines shall be less than any given magnitude, and consequently if the body descend in a curve, it will suffer no loss of velocity."

3d. It is a great mistake to affirm, that there is no friction in rolling surfaces. This is called "the second kind of friction;" and is, like all other friction, proportioned to the accuracy of the surfaces.

4th. There is no other impediment to a body once put in motion, either in a circle or a straight line—continuing for ever in motion at the same velocity, but the resistance of the air and the friction. Neither the centrifugal force in the one case, nor in gravity the other, can operate in bringing the body to rest, but by the friction they occasion. Therefore the heavenly bodies having been first impressed with a given velocity, move on for ever in their paths, having no resistance whatever to bring them to rest.

5th. The fact that a quadruple power is required to urge a body from rest to motion at a double velocity, is one of continual observation. The simplest illustration is the gravitation of bodies: a stone of any weight must fall 16 feet to produce a velocity of 32 feet per sec.; through 64 feet to produce 64 feet per sec.; and through 144 feet to produce a velocity of 96 feet per sec.; and so on always increasing the distance as the square of the velocity. Now all these stones, if they could rebound from a table with perfect elasticity, would rise to the same height from which they fell; thus giving out all the powers which they had acquired in the fall. This law holds equally, whether bodies move in straight lines or curves. Thus the charges of gun-powder, necessary to propel cannon balls at various velocities, are as the squares of these velocities and the distance to which cannon balls will penetrate wood or earth, or anything which does not suddenly reverse their motion, are also as the squares of their velocities. If, however, a cannon ball strike a battlement of stone, its effect to shake the masonry will only be as its weight multiplied by its velocity; but the rebound of the ball will be in proportion to the square of the velocity with which it impinged. Hence the maxim, that where a wall is to be battered, heavy shot at slow velocities are most economical; and the catapulta of the ancients was more effective than modern cannon; but where a ship's side has to be penetrated, then the higher the velocity the better.

Again; the rule for the rebound of elastic bodies, when they impinge on each other is, that "the sum of the products of each body into the square of its velocity, is the same after collision as before."

See Hutton's Dictionary (Gunnery) (Projectiles) (Collision) and (Percussion).

So far for illustration and proof of this fact; and in answer to the simple question "what becomes of the quadruple power imparted to a fly-wheel, when that wheel is allowed to come to rest?" the answer is, that a fly-wheel revolving with twice the velocity of another, will make four times the number of revolutions which the other will make, before the same amount of friction or any other resistance can bring them to rest. Thus the rule is plain, which declares that the effect of fly-wheels, either in steam-engines or other machines, is as the weight multiplied by the square of velocity.

6th. It must be always remembered, that it is only in bringing the matter from rest into motion that this quadruple force is required—when once put into motion, it ought to continue for ever to move at that velocity; therefore, a certain other power will only be required to keep a body in uniform

motion, proportional to the velocity simply, and equal to the friction and resistance of air; but the moment that a change of velocity is attempted, a quadruple effect will either be given out or required to be exerted, according as the velocity is increased or diminished.

For the fullest and clearest elucidation of this, read "Farey on the steam-engines,"—introductory part on "central force."

Your's respectfully,
R. P.

June 1, 1840.

[The observations of "R. P." do not invalidate our position, that there is a loss of motion by rotation, and that the same power is required to propel a body round a circle that would carry it with the same velocity through the length of the four sides of a square in which that circle is described. As "R. P." admits that, by our demonstration, it is clear there is a loss of power in altering motion from one straight line to another; it is incumbent on him to show what are the peculiar properties of a curve, which enable it to deflect motion without any loss of power. With due deference to the authorities quoted by "R. P." we think that in a question of this kind, involving the elucidation of a principle of motion not hitherto attended to, we should be guided wholly by facts, and by reasonings from facts. Mr. Carson quotes Sir Isaac Newton in proof of the correctness of the principle of his centrifugal engine; "R. P." quotes authorities to prove that Mr. C. is wrong; and we might adduce others to show that neither of our correspondents is right. The motion of a pendulum and of other bodies moved by the attraction of gravitation, does not apply to rotary bodies; for, in the latter cases, gravity is the resisting force instead of being the moving power; and we have previously stated, that the attraction of gravitation compensates in pendulums for the loss of power by curvilinear motion. In some of the assertions of "R. P." respecting quadruple power and double velocity, we cannot agree; nor can we comprehend his statement respecting the direction of bodies when thrown from a revolving wheel. Every one who has attended to the subject must have observed, that particles of matter thrown off revolving wheels, are impelled in directions at right angles to the radii; this fact is alone sufficient to prove that there is no force acting directly from the centre of the revolving wheel. The governor of a steam-engine is not a happy illustration of "centrifugal force," inasmuch as the balls are prevented from moving freely by the suspending joints. The loss of motion by friction, is a question not immediately connected with that of rotary motion; we shall probably discuss it on a subsequent occasion.]

ON THE ENCOURAGEMENT OF ENGINEERS AND OTHERS.

(To the Editor of the "Inventors' Advocate.")

Sir,—On reading over the leading article in No. 40 of your excellent Journal, I was very much gratified with your observations upon engineers, &c. First, to find that meritorious mechanics have found in you an advocate in their behalf; and, secondly, with your remarks on the necessity of some encouragement for persons moving in a respectable sphere of life engaging in the profession of engineers; and, therefore, I hope and trust, through your powerful

assistance and public advocacy of the principles contained in your remarks, that not only will this be done for the youth intended for engineers, but, also, that more encouragement will be awarded to those already employed upon railways, and that directors and managers will see the necessity of acting upon your suggestions, for I could point out many men who are both qualified for, and willing to undertake the responsibility of engineers, or any other employment upon railways, if the salary was equal to the risk and responsibility incurred, and, what is of still more importance, if merit and good conduct would guarantee a permanency of their situations. This is not the case at present, for a man is liable to be discharged *sans crémone*, at the caprice of some clerk, or such person, no matter what may be his ability or knowledge, should he offend one of these gents. Now, sir, is this a proper system, is it just or reasonable, that men who use their best exertions to perform their duty faithfully—is it likely that they will or can devote their time and talents to improve and perfect the locomotive with such prospects? Certainly not. But only give them encouragement according to merit; let them feel secure in their situations, so long as they conduct themselves with order and regularity—then would improvements progress, economy would follow, for each would have an interest in the welfare of the establishment, and the company would soon have reason to feel satisfied with the result. I know many men who are employed upon railways to drive engines, and others who are engaged as fitters, who have not any knowledge of the construction or of repairing one, and the latter are unable to undertake to erect, or properly repair, without some one to direct their labors and take the responsibility of the work; yet these men get the same pay. Now, I think a person who has a good practical knowledge of the construction and working of locomotives, who feels the responsibility attached to him when entrusted with a train (that any neglect on his part might cause serious loss of life) and who is steady, sober, and industrious, deserves encouragement and support. Let this be the system; I have no fear for the result, for the really deserving man would be duly appreciated, and properly paid, and the company would secure the services of useful servants. I am at present possessed of improvements in locomotives, that would increase their power one third, without any addition of fuel, and a saving in their construction in consequence of its simplicity, and I should introduce it, if I could feel certain of some reward for my trouble. I hope you will have the kindness to insert this, and oblige

Your most obedient servant,

A. W. B.

May 24th, 1840.

VARIETIES.

Cure for Squinting.—The plan recently adopted by M. Dieffenbach, surgeon of Berlin, for curing squinting, by dividing the inward muscle of the eye, is said to be very successful, and the number of persons who submit to the operation are daily increasing. M. F. Verhaeghe, physician of Bruges, who squinted dreadfully, being at Berlin, witnessed the success of M. Dieffenbach, and determined to be operated on. It was perfectly successful, and at the end of ten days, he was quite cured. He was the thirty-first patient who had been operated on; and the cure effected on him, created such a sensation in Berlin, that in the ten following days twenty other persons submitted to be operated on. The operation, it is said, lasts at the most, not more than three minutes, and it is not very painful.

Silk Culture.—The editor of the *Jamaica Royal Gazette* announces the arrival in that Island, of Samuel Whitmarsh, Esq., from America, a gentleman who has made the culture of Silk his particular study for nine years:—"Mr. Whitmarsh having brought a large supply of plants of the Mulberry with him, intends to distribute them amongst a

certain number of gentlemen who will engage to plant them, and pay attention to their cultivation for the next 12 months. Having picked out the best spots, and seen them planted, Mr. W. will return next year and superintend the rearing of the worms, and the cultivation of the silk, until thoroughly established, when he hopes to see this Island one of the richest spots in the world. He considers the climate peculiarly favorable for the cultivation of silk, and likely to give three times the return as the same quantity of land in America, being able there to continue its cultivation for three months only in the year, and this Island, at the least, affording three crops from its perpetual summer. The sample of silk brought over by Mr. Whitmarsh, is very rich, and very beautiful. We shall add little at present, but we have no hesitation in saying that if Mr. Whitmarsh can establish the cultivation of silk in this Island, so as to become an article of export, he will not only deserve the thanks of the inhabitants, but his name will be handed down to posterity, as one who will have done so much for the welfare and prosperity of the Island. As a silk cultivator, Mr. Whitmarsh comes to secure its cultivation in this Island, and we sincerely hope he will be successful."

Napoleon's Remains.—The coffin in which the remains of the Emperor are to be brought from St. Helena, and the pall with which it is to be covered, are making at the administration of the Pompeus Funébres. The coffin is to be of solid ebony, in the form of an ancient sarcophagus, and of sufficient dimensions to receive the coffins in which the remains were originally deposited, and which will thus not be disturbed. The pall is to be of black velvet, covered with golden bees, and bound all round with deep ermine; above which will run an arabesque border, wrought in silver, interlacing the cypher of Napoleon at certain distances in gold, and having at each corner a golden eagle and the imperial crown.

Lord Nelson's Monument.—The workmen employed in excavating a part of the ground in front of the National Institution for the foundation of the monumental pillar, about to be erected to the memory of Nelson, discovered on Wednesday, a quantity of animal remains, principally composed of the bones and horns of oxen, but some of the bones were believed to be those of human beings, whilst a few of the pieces of horn found, evidently, from their shape belonged to some of the deer species. The trunk of a large tree, apparently an oak, was also found horizontally imbedded in the earth at the depth of about ten feet, the pickaxes could hardly penetrate it, but when it is dried in the air, it will no doubt fall to dust. Ancient remains of foundations are now continually turning up; they are composed of unhewn stone and lumps of chalk and flint. The foundations at present appear to be about eight feet wide, and from 30 to 40 feet in length, forming parallel walls at a distance of 40 feet from each other. It is believed they are the ancient remains of an ancient cross or market-place.

Eddale v. Pearsey.—Mr. Rogers obtained an injunction *ex parte* on behalf of a patentee of certain saw mills in the City-road, which were employed for cutting lucifer matches, to restrain the defendant from using a machine which was alleged to be an infringement of his patent. The invasion was clearly proved on declarations by the defendant of the "galloping rate" at which he was going on making the matches.

Wreck of the Royal George.—During the week, a great quantity of the wreck of the Royal George has been got up, and deposited in the Dockyard. Various articles have also been recovered from it, viz., part of a gipsy hat, lining, trimming, and chip foundation—all in a perfect state; part of a silver ink stand, and a quantity of sealing wax, top of an ink stand with lion for handle; a pair of large breakfast saucers, old Indian blue china, quite clear and perfect; bottles of wine, port and sherry, nauseous, but not destroyed either in color or taste;

the outsides of the bottles are incrusted with a coating of mud and iron, which falls off upon exposure to the air, leaving the bottles quite clear. Many small bones of feet have been found in shoes, with other larger human remains.—*Hampshire Telegraph.*

*Concretions on the Bottoms of Steam Boilers, &c.—*A simple and efficacious method is now known of preventing the incrustations, in question; it is, to add from 26lb. to 33lb. of potatoe to the water in a boiler which consumes from 55lb. to 66lb. of coals per hour. The boiler may then be employed for 20 or 30 days without being cleaned, and without any fear of a calcareous deposit. After this time, the mud must be thrown away, and the same quantity of potatoe again be added. It appears that the fecula, by dissolving in the water, renders this sufficiently viscous to prevent the deposition of the calcareous matter. Flour would produce the effect, and much less of it would be required. A few days after the steam boiler intended to heat the exchange in Paris was brought into use, it was perceived that there was a hole in the bottom. The fire was extinguished, and it was found, upon emptying the boiler, that the metal was burnt in a place where a rag (chiffon) had been deposited, which had been forgotten when the apparatus was set up.—*Foreign Quarterly Review.*

Geographical Enterprise.—An Aerial voyage over Central Africa, was suggested during the meeting at Exeter Hall, at which His Royal Highness, Prince Albert, presided, on Monday last. It was suggested, that the veteran GREEN (accompanied by two medical gentlemen, duly qualified for experimenting on atmospherical phenomena, and for delineating the features of the country), be attached to the expedition, now fitting out under the sanction of Government. So honorable an enterprise would indeed be worthy of so intrepid an aeronaut. It would, moreover, be far more useful and profitable than his projected voyage across the Atlantic.

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING JUNE 8TH, 1840.

Monday.	R. Geographical Society.....	9 P. M.
Tuesday.	Medico Chirurgical Society....	8½ P. M.
	Zoological Society.....	8½ P. M.
	Meteorological Society.....	8 P. M.
Wednesday.	Society of Arts.....	7½ P. M.
	Geological Society.....	8½ P. M.
	Royal Medico-Botanical Society.	8 P. M.
	Graphic Society.....	8 P. M.
Friday.	Royal Astronomical Society... .	8 P. M.
	Royal Institution.....	8½ P. M.
Saturday.	Mathematical Society.....	8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL INSTITUTION.

May 22d. Friday Evening Meeting.

Mr. W. T. Brade delivered a lecture on the manufacture of "White Lead." In the first place the lecturer alluded to the importance of this substance as an article of commerce in this country, and detailed a few of the most remarkable chemical properties of lead. To form the white lead, or carbonate of lead, it is necessary that an equivalent of lead, whose atomic number is 104, must combine with an equivalent of oxygen 8, forming 112 parts of oxide of lead; this unites with 22 parts of carbonic acid, forming 134 parts of carbonate, or white lead. The three different oxides of lead were noticed, and the properties of litharge, massicot, &c., explained. Lead is a metal very difficult of oxidisation, on account of which it is employed for various purposes where a covering is required, as the roofs of houses, &c.,

being exceedingly durable. If metallic lead be reduced to fine powder, it becomes most inflammable; to illustrate which, Mr. B. had some lead very finely powdered, hermetically sealed in a tube, which on being broken and let loose into the air immediately inflamed. A great peculiarity of lead is, that it cannot be oxidised except at the expense of an acid; other metals generally receiving their proportion of oxygen from water. A singular and not generally known fact, is that of the action of water on lead. If it be put into pure water, it very soon becomes covered with a whitish powder, which is carbonate of lead. This circumstance has been long known, and it was formerly considered that the water was impure; the fact is, the less pure the water the less is its action on this metal, and it is on this account that lead is used for cisterns and leaden pipes to convey water, with impunity; it must not, however, be considered that it is the action of the water itself on the metal which produces this white powder; it is the carbonic acid the water holds in solution acting upon the lead producing the carbonate. Mr. B. exhibited a specimen of lead which had been introduced into water that had been boiled five or six years ago; it was as bright and clean as the day it was introduced; other specimens were shown in which the water had not been boiled; they were covered with the white powder. To follow up this statement, Mr. B. took a portion of distilled water, of river water, and of water which contained sulphate of soda in solution, in all of which lead had been immersed for a few days; and clearly proved, by the test of sulphuretted hydrogen gas, that the distilled water had taken a larger proportion of lead into solution than either of the others. From these experiments it must be evident, that if the water companies supplied distilled water instead of ordinary river or impure water (chemically speaking), and the same means were employed for collecting and retaining it, as in leaden cisterns, pipes, &c., the result would be of the most dreadful kind, as the water, when impregnated with lead, would act as a poison.

The various processes for procuring white lead as an article of manufacture were then stated. In one process the lead is granulated and placed in large iron revolving cylinders; in these it is exposed to air and water; the material thus produced is a mixture of oxide and carbonate of lead; the oxide is afterwards exposed to carbonic acid gas, it then becomes converted into white lead. This process, however, was stated not to answer on the large scale, the returns not being equivalent to the expenditure. Another process was described, which consists in taking an acid solution of lead, and adding the carbonate of an alkali, by double decomposition or chemical action the carbonate of lead is precipitated. This process is likewise too expensive, and is not much employed. To economise materials is one of the great desiderata of manufacturers, and this is effected by the process of Mr. Hemming, which was briefly explained.

By boiling any of the solutions of lead in litharge, they are capable of taking up an additional quantity of the metal, and forming what are termed subcarbals by the chemist; on passing a stream of carbonic acid gas through them, abundance of white lead is precipitated; this process has been conducted in Germany on a large scale.

In the patent process of Messrs. Button and Dyer, the subnitrate of lead is employed; this preparation is only capable of remaining in solution while hot, as soon as it becomes cold, the subnitrate is thrown down insoluble. Through this hot solution a current of carbonic acid gas is passed, and the excess of lead is precipitated as a carbonate, the neutral nitrate remaining in solution; the precipitate having been removed, the solution is again boiled with litharge, and the process repeated. A very elaborate model of a manufactory for procuring white lead by this process was exhibited. The quantity that can be manufactured by this process in the factory of which the model was a representation, is six tons per day, or between 30 and 40 tons per week. Various other processes were described, including that of Messrs. Gossedge and Benson, who mix litharge

with acetate of lead and water, and place these materials in an atmosphere of carbonic acid; and another in which common salt and litharge are mixed together, and the product decomposed by sulphuric acid.

Notwithstanding the various improvements which have been brought forward, the old method furnishes nearly the whole of the white lead, 16,000 tons being annually manufactured. The process is as follows:—In the first place it is necessary to set out with pure metallic lead, and it is absolutely necessary that it contains neither iron or silver; it is then cast into stars, sometimes but rarely into plates or gratings, each of the forms being made to fit into conical earthenware pots, at the bottom of which is placed purified pyroligneous acid, so as not to touch the metallic gratings, which are exposed one above the other, so as to fill up the pan, by this means they are exposed only to the vapor arising from the vinegar or pyroligneous acid; in order gradually to vaporise the acid, the pans so prepared are arranged in stacks composed of the refuse oak bark of the tan-yard, mixed in proper proportions with other materials, so that a temperature is produced by their fermentation sufficient to cause the acid to rise in vapor. To give an idea of the extent of a white lead manufacture, Mr. Brände stated, that in the one he had recently inspected there were 15 or 16 stacks, each stack containing 12,000 pans and 50 tons of lead. In four or six weeks, if all has gone on perfect, the conversion of the lead into carbonate is completed. Samples of the stars, gratings, &c., were on the table, which as they become encrusted enlarge in bulk; the lead is not always all converted into white lead; there generally remains a choir in the centre of the white mass. The material is then removed from the pans, passed through rollers, well washed, ground to an impalpable power, and dried; it then forms the common white or carbonate of lead of commerce. The reason why tan is employed in preference to other substances is, in order that sulphuretted hydrogen may not be generated, which would materially interfere with the color of the material. With regard to the theory of this last process, chemists have not as yet agreed upon the subject. Mr. Brände is of opinion that the carbonic acid is yielded by the pyroligneous or acetic acid.

Specimens of Kremnitz white lead were exhibited; this kind is peculiarly applicable for producing the glossy appearance on cards. Mr. Brände stated it was made in the same manner as that just described, with this difference; that the lead used is of a different form, generally in masses; the process is much slower and seldom adopted.

From careful analysis, Mr. B. finds that there is as much carbonic acid in the white lead formed by corrosion, as in that prepared by precipitation. The old manufacturers do not consider the precipitated article to possess so fine a texture as that the result of corrosion. Mr. Brände, in conclusion, alluded to the very liberal manner in which the several manufacturers came forward and lent him specimens to illustrate the present lecture, and likewise invited him to inspect their works; among these were Messrs. Delarue, Button, Dyer, and others.

We did not observe anything of importance in the library, with the exception of the *Feather Flowers*, executed by Mrs. Randolph, noticed in a former report.

It was announced, that on the following Friday, Mr. Brockedon would deliver a lecture on "Some new application of Caoutchouc."

LINNAEAN SOCIETY.

May 29. *The President's Soirée.*

The Bishop of Norwich, President of the Linnaean Society, gave his second *soirée* to the Fellows, on Friday, May 29th, at his residence, 38, Lower Brook Street.

Mr. Powell attended with one of his improved and powerful microscopes, and exhibited several interesting objects, including the circulation of the green granules in the fluid within the cellules of

the leaf of *Vallisneria spiralis*. Beautiful and interesting specimens of *Diatoma* were also shown under high powers. Having on several occasions in our reports alluded to Mr. Powell, we take this opportunity of acknowledging, the very obliging manner in which this gentleman comes forward to render his assistance, and the result of his many years' experience in this department of optics, with, we feel assured, no other view, than to render benefit to microscopical investigations, by revealing with the aid of his most perfect instruments, the beautiful, and in some instances the most disputed points in nature; thus affording the lovers of science, whose time and occupations do not allow them leisure to follow that particular study, an opportunity of witnessing the results, which labor and experience alone can accomplish.

On the table were several interesting works, including a folio book containing the original sketches made by R. H. Schomburgk, Esq. during his travels in British Guiana.

A vitrified mass of the remains of straw, that had been consumed in a stack by fire, attracted attention.

Among the several Fellows were, the Bishops of Hereford and Lichfield, the Dean of Chester, Sir W. J. Hooker, Messrs. Robert Brown, Menzies, R. A. Schomburgk, Yarrell, Bell, Ogilby, W. Thompson of Belfast, Hawkins, Bennett, Dr. Fitton, Dr. Boot, &c. &c.

MEDICO-BOTANICAL SOCIETY.

May 27th. *Dr. Sigmond, in the chair.*

The minutes of the preceding meeting having been confirmed and the donations announced, the Secretary proceeded to read a communication from Mr. R. W. H. Hardy, on the "Bark of the root of the Polo-Cat Tree," which grows on the banks of Mysore. Mr. Hardy is of opinion that the virtues of this tree are not generally known to the members of the medical profession; it is celebrated in the country where it is found, as a remedy in that form of scurvy, when the blood-vessels of the gums and mouth are in that weak state, that they give out blood. It not unfrequently happens that both men and women, and also children, are severely attacked with this malady in these regions from various causes, inasmuch as they frequently awake and find their mouths full of blood, and the pillows stained. The properties of this drug are known to every hunter in Mysore, and resorted to with great benefit in this disease, and speedy relief is said to be afforded. A discussion ensued as to the probable properties contained in the drug forwarded for examination. Mr. Judd was of opinion, from a few experiments he had made with it, that it did not contain tannin, but considers its properties to depend upon a principle peculiar to itself. The specimens were referred for further examination. On the table were numerous specimens of fresh medical plants from W. T. Iliff, Esq., and others from Mr. Gibbs. The examination of the specimens called forth several interesting physiological remarks from Dr. Sigmond, Dr. Farre, and Mr. D. Cooper. A fine specimen of *Extract of Conium* was exhibited by Mr. Squires, produced from plants of this year's growth, retaining a most beautiful green color. The meeting then adjourned until June 10th.

THE THEATRES.

"See that the players be well used."—*Hamlet.*
"Nothing extenuate, nor aught set down in malice."—*Othello.*

HER MAJESTY'S THEATRE.—On Tuesday, Mdlle. TAGLIONI made her first appearance in her favorite ballet of *La Gitana*. On her entrance, she was greeted with such enthusiasm, that she seemed scarcely to know how to acknowledge it. She receded to the back of the stage, curtseying to the ground at almost every step with the most exquisite

expression. The beauties of her dancing have been dwelt on again and again; but they are of so high an order that they are always new, and the last appearance always seems to be attended with some fresh charm. A mere inexpressive succession of postures, however elegant, will weary on repetition, and become insipid; but the art that expresses feeling will always awaken new sympathies, and when the external gestures are learned by rote, the internal motive that peers through the whole will ever kindle a novel interest. In the *pas de trois*, on Tuesday night, TAGLIONI threw a complete meaning into her slow movements; there was a gentle tenderness about them, a feeling for which her graceful motion seemed the natural expression. Then came the dart into the quick movement, as if some joyous fancy had suddenly entered the mind of the dancer, and sent her less bounding than flying along the stage with the wanton glee of a bacchante. Her mazurka was very fine; at times she seemed to sink into mere indolence, as if the dance had grown so habitual, that she might listlessly leave her limbs to take their own course, her face expressing little more than a happy contentment; then would her countenance suddenly light up, a new animation possessed her frame, and she was wafted along by its influence. Every one of her *pas*, from the mazurka to the concluding cachuca, drew down thunders of applause.

The Queen Dowager was at the theatre, which was numerously attended.

PRINCE'S THEATRE.—WEBER's opera of *Euryanthe* was produced here on Wednesday: the story has a singular affinity with the *Cymbeline* of Shakespeare. As in that drama, the plot turns on a wager on the virtue of a lady (*Euryanthe*); and the villain, to gain his victory, persuades the lover of the falsehood of his mistress, who is innocent. A ring is produced as the evidence of guilt, and on the lover refusing to credit this testimony, his betrayer tells him a legend, which he (the lover) had intrusted to the lady alone. *Euryanthe* has been betrayed by a female confidant, who has communicated the legend to the libertine, and who is afterwards rewarded by his hand. In a fit of remorse, at the end, she declares the innocence of *Euryanthe*, her husband stabs her, enraged, and *Euryanthe* and her lover are made happy. The composer has had a very fine opportunity for expressing the reverence of the vassals of the middle ages to their liege lord. *Adolar*, the faithful lover, stakes all his lands on the virtue of his lady, and when these are taken from him, and his adversary becomes master of the soil, the adherence of the vassals to their former master, and their dislike of the intruder, are well expressed in the last act by composer, dramatist, and chorus; the latter, as usual, going heart and soul into their business.

The libretto is by Helmina von Chézy, a lady who is not unknown among the lyric poetesses of Germany.

There is a great deal of fine music made to sympathise with the unfolding of this singular plot, and all of it that is chorral is most striking and effective. The well-known and very beautiful conclusion of the first act was encored with great fervor. It is unfortunate that the music of the four leading parts is all very detailed, and most trying to the powers of those who have the task of sustaining it. Herr Pönicke alone did justice to his portion of the score. His recitative and aria, at the commencement of the second act, was exceedingly fine, and by much the best bit in the opera. Madame SCHWARZBACH played *Euryanthe* with great zeal and much merit. The spirit with which she took the lead in the chorus ending the first act, had not a little to do in bringing on its encore. SCHMETZER also deserves applause for his anxiety to execute his task effectively. He seems, however, more like a prominent pupil than an accomplished artist, and the result of his performance is but tame. The overture was encored.

The dresses were exceedingly elegant, and the colors well contrasted, to render the groups as picturesque as possible. The scenery was far from appropriate, and would have done equally well for

any other opera. The house was well attended, and the audience seemed to have been well pleased with their entertainment.

HAYMARKET.—"Ossa has become a wart,"—Charles KEAN has again "done" *Hamlet*. Duty compelled us to see him once more, with a view to observe what improvement had taken place in his performance since last he visited us. Alas! there was none. The same measured step—the same stage trick—the same labored attempts at *tableaux*, and the same croaking voice, were observable; and we may say with truth, that we quitted the theatre in disgust. Not so, the audience; for they applauded everybody, and every thing—from the scene-shifter and "green-coat man," to the "great tragedian's" pocket handkerchief! Shakspere innocently asks, "What's in a name?" His 'spirit' is now fully aware that the name "KEAN" has done him grievous wrong. But for this name, the tragedian who now wears it, would be known only as a private individual. Would it had been so, for the sake of the drama!

ASTLEY'S.—The entertainments here continue very popular, and are varied, as usual. The feats of horsemanship are truly wonderful.

DRURY LANE.—With a daring spirit of enterprise, ELIASON has projected the opening of this theatre on Monday, with *Concerts d'Eté*, on an immense scale. There will be 98 instrumental, and 26 vocal performers, all first-rate. The price of admission to the promenade will be only one shilling! Most cordially do we hope, that the speculation will prove one of great profit. These concerts are a national boon, and attract some thousands who, did they not exist, would most probably pass their evenings in a far less profitable manner.

Mdlle. Katinka HENFETTER (the youngest sister of our two friends Clara and Sabilla) has been engaged for three years at the Grand Opera at Paris, and is to make her *début* there in Mayerbeer's new opera. She is very handsome and has a fine voice, but as yet is quite untaught.

MADEMOISELLE RACHEL.—This popular and interesting young lady was to have been married to M. Degouve-Denunques, of the *National*, republican print, but political influences were exercised to prove to the tragedian that her interests at Court would be injured by the union; and Degouve-Denunques having had a hint to this effect immediately absolved her from the engagement. The affair is thus entirely broken off, and she has departed to fulfil her other engagements.

THEATRICAL MOVEMENTS IN THE UNITED STATES.—Fanny ELSALER is in fine health and spirits, and has been rehearsing one of her ballets the whole of this week, previous to her appearance at the Park some day next week. Every seat in the dress circle has been taken for the first week of her performance; all the private boxes, and nearly every box seat besides. The desire to see her is increasing in intensity every hour, and already three times the original price of admission has been offered as a premium for seats for the first two or three nights. The managers of the Boston and Philadelphia theatres were here in two days after her arrival, to make engagements. When she appears at the theatres, she is "the observed of all observers."

In this city theatricals seem to have revived by her arrival. Booth has been playing *Richard*, *Iago*, *Hamlet*, &c., this week at the Chatham to crowded houses. Henry Wallack has been supporting Booth very ably; his wife is singing successfully at Peale's Museum, with Billy Williams, and the Belgian Giant. Williams and Master Diamond have left for a tour through the land of steady habits to astonish the natives of Newhaven and Hartford.

CELESTE the queen of pantomime—the never-tiring Celeste—is engaged at the Chatham to play a round of those favorite characters in which she is without an equal.

HAMSLIN and BARRY have been "doing" the legitimate drama at the Bowery for the last week, assisted by Mons. Kishnig, the man monkey. Mitchell's little shilling theatre still puts money in the pocket of the manager. The Park has revived lately. Mrs. Fitzwilliam's engagement has half-filled the house every night. So much for city theatricals.

In the provinces, Misses Poole and Shireff, Guibelei, and Manvers, have been playing in Philadelphia. Wilson has closed his theatrical engagements, and is now delivering a course of lectures on Scottish song in this city. They are respectfully attended. Mr. and Mrs. Martyn are in the city enjoying the *otium cum dignitate* of professional private life. Seguin and his wife were last heard of at Augusta and Savannah, where they were very successful. That excellent musician and general favorite, Jones, has returned home after a successful tour to the south. Brough and Madame Otto are doing a big business together in the towns on the Mississippi.

So much for the opera people. Vandenhoff and his daughter have been playing at Baltimore. Hackett is at Boston. Hill is with Miss Reynolds among the natives at Albany. Flynn and Dernay are building a new theatre at St. John's, New Brunswick. Lambert is with Abbott, at Charleton, Augusta. Old Jack Barnes, wife and daughter, at New Orleans. Lecomte and troupe were last heard of at Louisville, doing a big business, and setting the Missouri men crazy. The rest are as they are. Theatricals have been at an awfully low ebb in this country, and in this city especially; but perhaps the arrival of Fanny Elsaler may give a new impetus to theatres, and to the rage for attending them.—*New York Morning Herald*, May 9.

Madame PASTA has at length accepted an engagement for the ensuing winter at St. Petersburg.

ADVERTISEMENTS.

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THE INVENTORS' ADVOCATE, AND JOURNAL

A WEEKLY BRITISH AND

FOREIGN MISCELLANY OF



INVENTIONS, TRADE, MANUFACTURES, LITERATURE, AND THE ARTS.

PRINTED BY JOHN EAMES, 7, TAVISTOCK STREET, COVENT GARDEN.

No. 45.]

SATURDAY, JUNE 13, 1840.

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THE SILK TRADE.

The manufacture of ribbons and laces appears to have been the first branch of the silk trade established in England. So early as the reign of Henry VI. the trade was cursed with protection, and consequently remained nearly stationary, until the folly of bigotry in France committed a greater blunder than the folly of commercial jealousy in England, by the revocation of the Edict of Nantes. Several of the Huguenots settled in Coventry, which had already become noted for woven fabrics, and about the beginning of the last century silk began to be mixed with woollen, in the manufacture of a species of poplin, and some pieces of whole silk were occasionally wrought. By degrees, the preparation of the finer materials superseded the coarser; woollens migrated to Yorkshire, poplins protracted a lingering existence in Ireland, and Coventry gained almost exclusive possession of the ribbon trade. The manufacture, however, advanced slowly, for the wisdom of our ancestors imposed heavy duties on thrown silk for the benefit of the throwsters, and prohibited the importation of foreign silk goods, so as to deprive manufacturers of the benefit of competition.

The progress of invention in the cotton trade extended itself to the silk trade, for the influence of prohibitory laws and protecting duties cannot destroy, though it sadly limits, enterprise and ingenuity. The introduction of the Dutch, or engine-loom, made a considerable change for the better, but the articles produced were of a very inferior description, "the figured goods being scarcely superior to cotton ribbons."

At length, the wisdom of prohibitions, drawbacks, protecting duties, and bounties, began to be doubted; and proposals were made for establishing a wiser and more liberal system. The fate of the question hung long in the balance, but fortunately the silk manufacturers did not form the majority of the Legislature, so common sense carried the day. The result affords an edifying comment on the predictions of "practical men;" the silk trade, instead of being ruined, has more than trebled in quantity, and has made a still

greater advance in quality. From 1815 to 1817 inclusive, when the prohibitory system flourished in unopposed vigor, the average total import of raw, waste, and thrown silk was 1,415,000 lb.; and in 1838 the amount was 4,887,419 lb. In 1823 there were only five Jacquard looms in Coventry; there are now more than 4,500.

The habit formed under the prohibitory system proved a serious injury. Though the manufacturers in the fancy and gauze ribbons could scarcely expect to rival the French, who possessed all the facilities of practice, taste specially cultivated, and a long-established market, they made the attempt, and the consequence was, extensive failures, which threw a large number of hands out of employment. But, while the French fancy ribbons thus triumphed, the British plain ribbons drove the Swiss out of the market, being better wrought, of finer quality, and twenty per cent. cheaper. The French goods had, and have, the advantage over the English, not in price, but in taste.

The highest class of French ribbons, the Coventry manufacturers can only look at, not copy; for they have not Jacquard machinery of the requisite "numbers" (of needles which guide the warp threads). The highest machines at St. Etienne are about 1,050; 900 are common, as also 600 and 400; while in Coventry the highest is 600, and the greater number 400, with some 250. The manufacturers say they have no market to pay for the higher machinery, the French having possession of the first-class market, for which alone it could be worked; and in entering that market they must enter into a struggle with the whole force of French taste and fashion, for which they are quite unprepared. There are now in Coventry a few intelligent weavers, who have taken up the business of designing, but it consists only in making up combinations from French patterns, and bits of prints, which they do now draft; a thing but a few years ago quite unexampled. For a design they frequently get nothing, and never more than half a crown; their livelihood being derived from the merely mechanical operation of drafting the patterns upon chequered paper for the reader, who, with the stamper, transfers the pattern from the chequered drawing to the cards of the machine.

The reading and stamping is done on the premises of the larger manufacturers; but at the houses of those who make it a profession, for the smaller. The Coventry manufacturers never use a trial loom, consisting of a single hand loom with a Jacquard machine attached, as the French do, for the purpose of trying patterns before they are put into the engine-loom; and hence results much loss and mischief.

The Coventry weavers ask for the establishment of a school of design, and a limited protection for

patterns. No one now disputes the propriety of either demand; the only question is, as to the extent of encouragement and protection necessary to the requisites of the case. In the mean time, the manufacturers are bestirring themselves to excite artistic taste among their workmen; active preparations are in progress for opening at Coventry, during the summer, an exhibition of machinery and manufactures, similar to those at Manchester and Birmingham, and the attention of the managers is particularly directed to the collection of such objects as will be most likely to excite the fancy of the operatives. We mention this with the earnest hope, that some of our artists will contribute the loan of their works to this useful exhibition, and that the patrons of art will assist it from their collections.

We come now to consider the industrial condition of the weavers, who, including winders and warpers, amount to between 17 and 18,000 persons in Coventry and its vicinity. They may be divided into "single-hand" and "engine" weavers, both of which are again separated into weavers of fancy or plain goods. Practically, however, the "single-hand" weavers, whether of plain or fancy goods, form but one class; they for the most part reside in the rural districts, and carry on their business by means of undertakers.

Each undertaker has generally seven or eight looms; a few have a greater number, up to sixteen; and one even fifty; but the man who has seven or eight looms finds himself fully occupied in managing the business of them, and when he has more than that number he requires the aid of an assistant, of nearly the same ability as himself, at wages.

* * Besidee fetching and carrying the work (which he sometimes leaves to his wife,) and superintending the work in the whole of the looms, the undertaker, with the aid of a boy to turn the machine, does the warping, which is the most difficult and the nicest of the operations; but he does not weave unless he has only two or three looms, one of which he will then work himself. * * The winding is the work of women and children, and is generally done in the undertaker's family: when it is not, the undertaker gives often to the families of laborers who are not weavers 1½d per ounce for winding fine warps, and 1¼d for coarse warps, and for shute, which is commonly of a heavier thread. When an undertaker's loom are at full work, they generally find employment for all his family in winding, since it would require two pair of hands, if both women; or a larger number, if part of them children; as is usually the case, to wind for every ten looms. The undertaker's wife, if she have very good silk, may earn 5s. per week; if silk of an average quality, only 4s., 3s. 6d., or 3s. The

value of the children's services may be known from the rate at which they are hired from other families. Their parents are paid 6d. per week for their services during the whole of the first year; 9d. for the next six months; and 1s. or 1s. 3d. afterwards: the advance in the hire of the children is sometimes earlier. Children never get more than 1s. 6d. per week for winding, the usual hours being from seven A. M. to eight P. M.; but at from ten to fourteen years of age (generally about twelve) the little winders of both sexes are put into the loom.

Three-fourths of the actual weavers in the single-hand loom are females, and the remainder boys. When we consider, then, that the price of raw material bears a much larger proportion to the cost of the manufactured article than any other woven fabric, we can at once see why the undertaker should be paid at a much higher rate than the weavers, and also why the undertaking system would be maintained among the dispersed population of the rural districts, after it was abandoned in the city. The greater part of the engine-work in Coventry is conducted on the journey-work system, which is obviously an improvement on that just described.

The 'first-hand journeyman' has his own looms, which, though more valuable, are fewer in number than those of the single-hand undertaker; and his house is generally so constructed, especially the modern ones, which are by far the best, as to have the household apartments on the ground floor, the sleeping apartments on the first floor, and the workshop at the top, capable of accommodating three or four looms. He obtains the work from the master, the warp prepared, and the shute in the hank; he finds loom-shops, looms, Jacquard machinery (if he be in the figure trade), and the wear and tear of all gearing; he gets the winding of the shute done, commonly in his own family, for which, when he takes in the work, he is usually paid at the rate of 1d. per ounce, though sometimes less. * * The 'first-hand' is responsible to the manufacturer for all deficiency of weight beyond one ounce in twenty, allowed for waste in the shute, and the same for thrums in the warp. The winding of the shute was, after its withdrawal from the undertaker, for some time done by the manufacturer; but this is now again given to the first-hand journeyman, on terms as cheap as to the master, while some employment is afforded to the younger members of the weaver's family.

"This system, however, is open to some objections, of which the depression and insecurity of the journeyman's 'journey-hands' are the most prominent.

"The factory system in the silk trade is limited by the difficulty of applying steam-power to the Jacquard loom, or, in other words, to the production of fancy goods. There are some factories of hand-loom weavers, in which economy of labor has been judiciously effected by employing two pairs of hands on each loom; the process of 'picking up,' or tending and cleaning the threads of the warp, being given to one pair of hands, while the other proceeds uninterruptedly with the 'shutting down,' or passing of the shuttles. The operatives, however, dislike the innovation, which they deem likely to lower the price of work; but as it would increase production, Mr. Fletcher thinks that on the whole they would be gainers by its general adoption.

"The question of wages in the silk trade is one of no ordinary difficulty. The weavers are paid by the piece, and, consequently, the amount of earnings must vary according to the skill and industry of the operative; and the net gain must be further modified by the deductions for hire of looms, assistance in warping, winding, &c. From Mr. Fletcher's calculations, it follows that the engine-weavers may earn the means of comfortable subsistence; but that the hand-loom weavers are generally in a very distressed condition, with very little prospect of amelioration, unless they change their occupation. To this, indeed, they must eventually be forced, by the mere progress of mechanical improvement, which, though it may operate at present as a disturbing force, will eventually develop its powers of re-adjustment. The following

view of the weaving population fairly states the nature of their condition.

"With regard to their pecuniary and physical condition, it will have been seen, that the money price of labor in ribbon weaving has, on the whole, declined less during the present century than the price of the articles on which it is usually expended, while a re-organization of the trade has greatly improved the position and circumstances of the great body of the city weavers, at the same time that it extinguished a middle class of employers; that the money earnings of the rural single-hand weavers were almost always wretchedly low, and are now little altered; that the condition of the ribbon weavers, so far as it is determined by the amount of their 'real wages,' or of the commodities which their money wages will purchase, has not, on the whole, declined during the present century; but, in the case of the city weavers, has much improved; that within the last ten years, since the recovery of the shock felt on the first introduction of foreign ribbons, and of the consequent depression of prices for weaving, there have been, however, successive reductions in these prices, under the mutual competition of the city and rural weavers; that, though their positive comforts have, on the whole, increased during the past years of the present century, the relative reward of labor has declined, as compared with the general condition of the handicrafts and of the propertied classes; and that this relative decline produces discontent among the weavers, and uneasiness among the neighboring higher ranks of laborers. The homes of the first-hand journeymen in the city present considerable appearance of comfort, and those of the single-handed weavers in the country frequently one of much misery; while the decline in out-door habits among the city weavers, entails a physical inferiority, which forebodes both immediate and future unhappiness. In 'condition,' therefore, by which term the commission undoubtedly contemplated their 'physical condition,' the ribbon-weavers, but more especially the single hand weavers, are a class not *positively depressed*, but *relatively outstripped* by other classes of society. By these, however, they cannot be abandoned to *relative depression* without evils being incurred of the most serious magnitude, through the struggles and uneasiness which must ensue among the laboring classes generally, from the existence, in the midst of society, of masses relatively so low in condition."—*Journal of Commerce*.

but if both be of the same construction, and raise a given weight, whether the water be discharged perpendicularly or forced through any length of horizontal pipes, there can be no mistake as to the amount of the effect produced, or, in other words, of duty performed, as that would be determined by the weight raised, if in a Cornish engine; or by the resistance overcome, if in an ordinary pumping engine.

Mr. Wicksteed observed, that there was no difficulty in instituting a comparison between the duty of a Cornish engine and of an ordinary water-works engine, because that by the former the water was raised through a perpendicular shaft, and by the latter forced through several miles of pipes, of varying length and resistance. He had for several years ascertained, by means of a mercurial syphon gauge, the pressure at the pump piston, and this gave with perfect accuracy the resistance overcome by the engine, whether arising from the pressure of water raised to a given or varying height, or from the friction in a great length of pipes. This was easily proved at Old Ford, where the water was raised into a perpendicular column or stand pipe, in which the level of the water would be that necessary for overcoming the resistance opposed by the pressure and friction. In making comparisons between the common water-works engine, and the Cornish, this was the mode he had adopted, and he believed it the only fair one. He had proved the accuracy of the mercurial gauges by the measurement of the column of water supported. The Cornish engine at Old Ford, acts by raising a weight of metal, which upon its return raises the water. This is the only engine in London of the kind, and to establish a comparison between it and any other pumping engine, it is only requisite to apply a mercurial gauge as just described to the pump of each, and whether the water is lifted direct, or forced through any length of pipes, the resistance or load against which the steam acts will be shown. Previously to his Cornish engine being set to work, the beam and plunger were balanced with the greatest accuracy, and their ponderance ascertained before the steam piston and plunger were packed. The weight afterwards added to the pump end, was also carefully ascertained. The weight raised at each stroke of the engine is thus accurately known. The number of strokes performed in a given time is registered by the counter. The coals are carefully weighed. By ordinary attention, the boilers are so managed with regard to the work to be done, that no steam is allowed to blow away, whether the engine be making three or nine strokes per minute; and in calculating the duty done by the quantity of coal consumed, no deduction is made for stoppages. Thus, a certain number of strokes being made, a known weight has been raised to a given height a given number of times by the consumption of a known weight of coals. This engine worked under the pressure of a column of water from 110 to 116 feet in height, and the water was forced through 300 miles of pipe, varying from forty-two inches to three inches in diameter. The load at the pump in the common pumping engine, is ascertained by the same means, and no error can exist in determining the duty performed by each.

Mr. Parkes observed, that the term "duty" did not seem to be quite understood; duty was not the weight of water raised one foot in height, but that weight divided by a bushel or other measure or weight of coals also; that the time in which the water was raised did not enter into the computation of duty, though it did into the determination of the horse power. He would again call attention to the fact, that coal was no measure of power or of the quality of an engine; that one engine might be doing more duty than another, because it had better coal or better boilers; and that the only standard of perfection between different engines was the relative consumption of water as steam for equal effects.—*Mining Journal*.

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK
ENDING JUNE 6, 1840.

ENGLAND.

ROBERT MICKLERHAM, Furnival's-inn, London, civil engineer and architect, certain improvements in engines moved by the pressure, elasticity, or expansion of steam, gas, or air, by which a great saving in fuel will be effected, June 6.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS
ENTERED AT THE ENROLLMENT OFFICE, UP TO
THE WEEK ENDING JUNE 6, 1840.

(Continued from No. 44.)

ENGLAND.

JOHN SUTTON, John-street, Roupell-street, Lambeth, machinist, improvements in obtaining power, May 23.—The specification does not sufficiently explain how the power is obtained; and all that can be discovered, is merely a combination of levers and pulleys, so peculiarly arranged as to give a stay and uniformity of motion to the machine.

The rod end of a bulb lever is connected with the crank and shaft of the engine; the bulb end moves on the periphery of a disc, or wheel, placed at the end of infinite levers, or an apparatus similar to lazy tongs; this again is attached to a quadrant or shoe lever, which moves on the periphery of a pulley wheel that is affixed on the end of a balance lever, which gives motion to a rod and crank of another axle.

The engine, or first motive power, moves the bulb lever, so as to work to and fro the infinite levers, which set in motion the quadrant or shoe lever, whereby the balance lever is made to work up and down, for the purpose of communicating its power to a rod and crank of an axle or shaft.

GEORGE DAVY, Llandudno, Carmarvon, mining agent, an improved mode of applying water-power, June 1.—The inventor claims the application of air-jackets, or chambers, to a column of water, and the method of applying the power obtained by the pressure of the said column of water, through the medium of the compressed air contained in the said air-jacket or chamber, whereby so great a quantity of air is driven into the working cylinder as to effect a great saving of water, which, in most cases of requiring a reservoir at a high level, is very important.

An upright tube leads from the reservoir to the full extent of the fall of water; at each 30 feet there is attached round this tube an air-jacket; three or four fine holes are made at the bottom of the tube, within the space that is covered by the air-jacket. The lower part of this upright tube has a lateral connection with a small cylinder, with a double piston or dead boxes working therein. At the opposite side of this small cylinder, is a lateral connection with the working cylinder, that moves, by its piston and rod, the pump or engine.

The water, passing from the reservoir down the upright tube, forces a quantity of air from the air-jackets, with the water, through the small cylinder (that has its double piston open), into the large working cylinder, by which means the piston of this cylinder is forced up; the tappets on the rod of this piston are so arranged as to strike a lever connected with the rod of the double piston, which admits and shuts off the supply of water from the upright tube to the working cylinder. The piston of this cylinder being now forced up, the tappet on the rod causes the lever to put the double piston in such a position as to cut off the supply of water; until the

water that is below the large working cylinder, flows out into the waste or discharging level.

The piston with the rod, in descending, by its gravity, causes another tappet to strike the lever, and put the double piston, or dead boxes, in the first position, in order to receive a fresh supply of compressed air and water, to set the piston in the large cylinder again in motion, which communicates its power to a pump or engine.

JAMES GUEST, Birmingham, Warwick, machinist, improvements in locks and other fastenings, June 2.—This improvement consists in having the bolt shaped in form of a scroll, and working on the pin of the lock. The disc of the bolt is steadied in its movements by a projecting surface from the plate, and round the pin of the plate is a projecting ring, concentric with the ward or wards. Two spaces are cut in this ring, so as to admit the ends of two spring catches, which catches are fixed to, and move with the disc of the bolt. Thus, when the bolt is in a locked position, one of the catches enters the slot of the ring, and it will require the use of the proper key before this catch can be removed from the slot to unlock the bolt.

There are several modifications of the lock, but they all work on the same principle.

LUKE HERBERT, Birmingham, Warwick, improvements in the mechanism and process of packing and pressing various articles of commerce, June 2.—The novelty of the first improvement consists in the method of working two pistons or followers of a press, by the action of one screw.

In place of being situated vertically as heretofore, the screw is placed horizontally, and at each end is a piston or follower, and between the two is the screw box; whereby the screw with its followers being worked either way, will press the ball of cotton or other goods, situated at both ends.

Another improvement is for placing the cords in spaces formed on the face of the headstock or bed, which enables the workman to draw them together, while the bale is in the press, by which means the goods are more closely packed.

There are plans of working two or more pistons or followers; and lastly, the inventor employs a cranked axle to give a reciprocating motion to a press, that is formed with a piston and cylinder, similar to an engine, and at each stroke of the piston, a tea packet is pressed to a very small compass, which adds to the convenience of packing, as well as to the preservation of the tea.

JOHN EVANS, Birmingham, Warwick, paper-maker, improvements for chemically preparing and cleansing felts used by paper manufacturers, June 2.—The felt is submitted for 12 hours to tanning liquor, then it is boiled in a strong solution of lime, that is, 14lb. of lime to 20 gallons of water, after boiling two hours, add 2lb. of alum, and continue the boiling for six hours; afterwards add 12 oz. of yellow soap, and the felt will be prepared for use when it has been rinsed in cold water.

The second improvement is for cleansing the felt, while in use on the paper-machine. The felt passes round a roller in a trough where hot water is admitted, and is thrown over the felt by the action of two bucket rollers, that are placed in gear with the cog-wheel at one end of the centre roller. The felt passes on to the cold water side of the trough, and then between two squeezing rollers, when it is prepared ready for the paper machine.

PIERRE MARCINÉE CRONIER, Paris, and Fricourt's Hotel, St. Martin's-lane, improvements in filters, and in the means of cleansing the same, and for separating coloring and tanning matters by filtration, or for improvements in tanning or employing tanning by filtration, June 4.—This is an improvement on the ordinary filter. Several boxes or divisions are arranged in the filter, and a cock is placed on each side of every box, to admit and turn off the water or liquor. For clarifying wine and vinegar, the filtering medium, in place of sand, is the kernel of apples or bruised stones of raisins. Hops and grain are used for beer; oil cake or the bruised stones of olives must be used for clarifying oil; and for these purposes cotton is used in place of sponge.

In order to clean the filter, the compression plate above should be kept in motion by working the handle of the pressure rod; thus the water will express the slime or dirt contained in the filtering matters, through the fine holes into the space below, where the cock is turned to allow the dirty water to run off.

In separating the coloring and tanning matters, the liquid is kept in motion by the compressing plate; so as to allow the aqueous particles to run off before the coloring matter subsides.

In employing tanning by filtration, the skins are separated for the purpose of allowing the action of the liquor by means of the compressing plate on all parts of the skins.

CHRISTOPHER NICKELS, York-road, Lambeth, improvements in propelling carriages, June 4.—This novel method of propelling carriages, is simply to place between the rails, on which the carriage runs, a central rail of sufficient breadth to hold thereon a large flexible tube, the whole length of the railway, made of india-rubber or leather. On this central rail, and over the flexible tube, runs a broad wheel, connected with the carriage. The propelling power being air, gas, or water, is forced into the tube, so as to cause it to expand and press against the pinch of the broad wheel; thereby compelling it to move forward with the carriage or train.

HENRY TREWHITT, Newcastle-on-Tyne, Northumberland, certain improvements in the fabrication of China earthenware, and in the apparatus or machinery applicable thereto, June 4.—The female die or mould, that forms the exterior of the jar or plate, &c., is made of three parts, which slide to and fro on the bed of the apparatus; springs are placed behind the parts so as to hold them together. The male die descends, by the application of a lever, and forms by pressure the interior of the jar or plate, which being completed is easily removed by raising the male or convex die, and drawing back the three parts, which form the female or concave die or mould; thereby leaving the article manufactured ready for the kiln.

GEORGE LOWE, engineer to the Chartered Gas Company, and **JOHN KIRKHAM,** engineer to the Imperial Gas Company, both of London, improvements in the manufacture of gas, the purposes of illumination, June 4.—First improvement is for the method of combining and working two retorts, that are placed horizontally. At the fore end of the retorts are placed ascending pipes, which are connected at right angles by means of the dip pipes. Slide valves are situated between the two retorts, which are again united at their further ends by a connecting pipe, that has also a sliding valve to shut off the communication when required. Each charge of coal is allowed to remain six hours in the retort; after the first three hours, the second retort is charged, the gas of which passes through the heated charge of the first retort, and combines with the gas, that flows up the ascending pipe, down the dip pipe, and into the hydraulic main. When the first charge has remained six hours, the sliding valves are closed so as to cut off the connection of the two retorts, and a fresh charge is put into the first retort; the slides are afterwards opened, and the gas is made to pass through the heated charge, that has been just three hours in the second retort; and so on alternately.

Second improvement is to employ a clay retort, above, which is surrounded by the furnace, and iron retorts at bottom to collect the heat as it descends.

Third improvement is to employ a blast of air to raise, as quickly as possible, the heat of the retort, and thereby prevent the escape of any gas passing off with the condensed vapors.

Fourth improvement is the mixing of gas tar with breeze or small cinder, and allowing the produce thereof to mix with the gas in the two retorts.

The last improvement is the use of a conical shaped vertical retort, which is fed from above. The gas is compelled to descend through the heated charges, and along the pipe at the bottom of the retort, to the ascending pipe on to the hydraulic main.

JOHN HEATON HALL, Doncaster, York, chemist, *improvements in preserving and rendering woollen and other fabrics, and leather, waterproof, June 5.*—The first preparation for the cloth is as follows:—Dissolve 2 oz. of alum in 1 pint of water; grind on a painter's stone 1 oz. of dry white lead of commerce in a pint of water; mix both together, and allow the precipitate to subside; pour off the supernatant liquor, into which the cloth or leather must be dipped. Acetic acid may be used in small quantity to dissolve the white lead.

The second preparation is half-a-pound of quick lime, dissolved in 1½ gals. of water, and when the fabric is almost dry after immersion, it is then put into the third solution, consisting of 2 oz. of Irish moss, dissolved, and mixed with 3 gals. of water, and after straining, it is mixed with two more gals. of water, which again must be strained, so as not to allow too much mucilaginous matter to remain.

The cloth is preserved against moth and insects by a mixture of camphor, arsenic, soap, and cream of tartar.

ENTERED AT THE ROLLS CHAPEL OFFICE, UP TO
THE WEEK ENDING JUNE 6, 1840.

(Continued from page 355.)

ENGLAND.

GODFREY ANTHONY ERMIN, Manchester, cotton-spinner, *certain improvements in machinery or apparatus for spinning, doubling, or twisting cotton, flax, wool, silk, or other fibrous materials; part of which improvements are applicable to machinery in general, June 2.*—1st improvement is the application of a moveable independent boulster, placed between the top and bottom of the spindle; that as the spindle revolves therein, the conjoined action of the centrifugal and centripetal forces in combination with such expansive boulster shall cause such spindle to revolve centrally and perpendicularly to the plane of the flyer. The expansive boulster is a ball forming three segments, which are placed round the conical part of the spindle; a loose socket or cap is placed over them; thus in revolving they cause the spindle to keep a steady and upright motion.

Second improvement is the mode of spinning the cap in a reversed position, by means of a short armed flyer; the length required being only that of the longest taper of the cap, which winds from the top towards the bottom.

Third improvement is the peculiar arrangement of mechanism for lowering the boulster or drag rail; when it is requisite to increase the friction, with the increased diameter of the bobbins.

Fourth, The application to spinning, doubling, or twisting machinery, of the morticed swivel lever for carrying the change wheels.

Lastly, the peculiar arrangement of mechanism or apparatus for the purpose of regulating the motion of the bobbins or spindle in roving, slubbing; and particularly the substitution of a cone, composed of toothed gear, and worked by a spur-wheel. The cone wheel placed horizontally, is fixed on an axle, one end of which has cog-wheels driven by the engine and taken into the teeth of the cone; a shaft running parallel with the upper side of the cone, has a cog-wheel giving motion to its shaft and causing the lifting or cap motion. On the lower side of the cone, is a shaft or rack running parallel with its surface. At the reverse end of the axle of the cone is fixed a mangle wheel, which in each revolution strikes a catch lever, at which moment the rack on the lower side of the cone is advanced by a weighted ball, and chain to the next ring of teeth in the cone: and so on at every rise and fall of the bobbin the wheel advances one ring, which insures the regularity of its motion.

JAMES NASMYTH, Patricroft, Manchester, engineer, *certain improvements applicable to railway carriages, June 4.*—This improvement is for stopping the engine or train by means of drags, put in action by the momentum of the entire train. The buffers are connected with an elastic bar or

spring, which is again connected by levers to the drags on the periphery of each wheel. The cord or chain leading the whole length of the train is fixed to each catch or pall that gears with the toothed rack connected with the elastic bar and buffers. Thus when the Tender man pulls the cord or chain, the catch or pall is thrown out of gear with the rack, and the buffers immediately press inward to work the levers, and simultaneously put in action all the brakes, which by their rubbing or brake action cause the train of carriages to stop.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specification will be published in the "INVENTORS' ADVOCATE," of July 18. Each party will receive, in addition, a *private communication* to the same effect.

John Francois Victor Fabien, King William-street, City, due July 7.
David Low, Adam's-court, Old Broad-street, merchant, due July 7.
Moses Poole, Lincoln's-inn, due July 7.
John Ridgway, Cauldon-place, Stafford, china manufacturer, due July 11.
John Ridgway, and George Wall, of the same place, two specifications, due July 11.
Robert Montgomery, Johnstone, Renfrew, due July 11.

FOREIGN PATENTS.—FRANCE.

A LIST OF PATENTS GRANTED BY THE FRENCH GOVERNMENT IN DECEMBER, 1838.

(Continued from No. 42.)

334. Mathey, Jacques Frederic, of Thann, département du Haut Rhin, a second patent of improvement and addition to the patent of invention for 5 years which he obtained Nov. 25, 1837, for a shuttle (*chasse navette*) movement, applicable to power-looms for weaving, Dec. 27, 1838.

335. Michel, François Alexandre Victor, of Paris, place Sorbonne, No. 30, a second patent of improvement and addition to the patent of invention for 5 years which he obtained, July 14, 1838, for a new press, Dec. 27, 1838.

336. Paine, Jean, of Paris, rue Git le Cour, No. 4, a patent of invention and importation for 10 years, for improvements in mechanical bellows, Dec. 27, 1838.

337. Porter, William Henry, represented at Paris by Charles Reynaud, rue du Temple, No. 119, a patent of invention and importation for 15 years for improvements in ships' anchors, Dec. 27, 1838.

338. Roussin, Jean Charles, of Paris, rue du Cherche Midi, No. 59, a patent of invention for 5 years, for a lithographic press, Dec. 27, 1838.

339. Sormani, Paul Joseph, rue Lemercier, No. 33, Batignolles, precincts of Paris, a patent of invention for 5 years, for a system of navigation, on the principle of a fixed rail, and vertical cylindrical wheels, Dec. 27, 1838.

340. Borecko de Chodzko, Napoleon Felix, of Paris, rue St. Nicolas d'Antin, No. 46, a patent of invention for 15 years, for a new process of engraving for all kinds of impressions, Dec. 31, 1838.

341. Capron, son, Jean Baptiste Antoine, of Rouen, rue Eau de Robec, No. 179, a patent of invention and improvement for 5 years, for a powerloom for making all woollen cotton or silk tissues, or galloon, for braces, Dec. 31, 1838.

342. Danjoy, Auguste, of Paris, rue des Saints Pères, No. 7, a patent of improvement and addition

to the patent of invention for 15 years which he obtained Sept. 29, 1838, for a new process of revivifying animal charcoal by the action of heat, Dec. 31, 1838.

343. Fontès, Gabriel Nicolas, of Paris, rue Saint Avoye, No. 42, a patent of invention and improvement for 5 years, for a new finish of silk hats, called "imberolefuge," Dec. 31, 1838.

344. Goebel, Charles, of Paris, rue Michel le Comte, No. 24, a patent of invention and improvement for 5 years, for 1st, a new basket for glasses, which he calls "qualicyat;" 2d, a new work-basket, which he calls "gutalar;" 3d, a new pattern for encrustation, equally adapted to the qualicyat or gutalar, Dec. 31, 1838.

345. Journet, Pierre, of Paris, chemin de ronde de la Barrière des Martyrs, No. 3, a second patent of improvement and addition to the patent of invention for 15 years which he obtained July 25, 1838, for a machine "omnitolle," called "machine omnitolle Journet," for the purpose of removing successively earth, stones, and generally all substances and materials drawn from the bosom of the earth; also adapted to exhausting and drying wells, Dec. 31, 1838.

346. De la Rachée, Edouard, of Paris, rue Saint Guillaume, No. 29, a second patent of improvement and addition to the patent of invention for 10 years which he obtained Aug. 25, 1837, for a new musket, to be loaded at the breech or by means of a ramrod, Dec. 31, 1838.

347. Malivert, Félix, Bordeaux, rue des Religieuses, No. 4, a patent of invention for 5 years, for a combination which he calls "rail digue," for the purpose of towing boats, drawing wagons, and susceptible of other applications, Dec. 31, 1838.

348. Morel, Hippolyte, of Paris, rue et île Saint Louis, No. 4, a third patent of improvement and addition to the patent of invention, importation, and improvement for 5 years which he obtained Jan. 20, 1837, for economical furnace, built of a foreign incomparable stone, uniting economy, cleanliness, and solidity, Dec. 31, 1838.

349. Morin, Jean Henri, represented at Paris by Richon, rue Montmartre, No. 53, a patent of importation for 10 years, for a new economical fuel, Dec. 31, 1838.

350. Oslawski, Victor, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of invention for 15 years, for a mechanism for the purpose of making way against currents, sailing against the wind at sea, or on stagnant water, and for ascending inclines on railways and other roads, Dec. 31, 1838.

351. Roch, Frédéric, of Tonnay, département de la Charente Inférieure, a patent of invention for 5 years, for a means of preserving wood from the ravages caused by the termites (insects), Dec. 31, 1838.

352. Roux, Magloire, of Paris, rue de Popincourt, No. 75, a patent of invention and improvement for 5 years, for a mechanical trough for oats (mange-avoine), Dec. 31, 1838.

353. Thatcher, Thomas, represented at Paris by Perpigna, rue de Choiseul, No. 2 ter, a patent of improvement and addition to the patent of importation and improvement for 15 years which he obtained Sept. 5, 1838, for an improved process for preventing or diminishing fermentation in manufacturing sugar, Dec. 31, 1838.

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.

ACADEMY OF SCIENCES.

The conduct of the French Academy of Sciences, in reference to the usual demonstration of respect on the death of one of its distinguished members having been omitted in the case of the late M. Poisson, has called forth an indignant comment from

the *Journal des Débats*, which attacks the management of the Academy also in other respects. The *Débats* says:—"The Academy had to decide whether the loss it has sustained in M. Poisson was of such magnitude, whether this illustrious academician had conferred such services on science, and whether the Academy itself had received such a degree of lustre from his researches, as to render it proper to honor his memory by that kind of mourning, during several months, as to declare that there was no necessity for immediately supplying the vacancy his death had occasioned. This honor is generally paid to illustrious men of science, and the Academy knows full well that in rendering this homage to their abilities, it confers honor on itself. In such cases, the question is referred to the section to which the deceased belonged, and when the opinion is declared by the President, that it is advisable to postpone the election for six months, it is usually agreed to without discussion. On this occasion, M. Gay Lussac announced that the section of physics recommended the postponement for six months of the election of a successor to the great mathematician whose recent death they deplored. If ever such a recommendation was justified by the magnitude of the loss, it was this, and Europe would have approved of this testimony of respect and admiration paid by the Institute of France to one of her most distinguished members. It was with real sorrow that we heard M. Arago protest against this honorable and proper wish of the majority of the section of physics, and that the majority of the Academy confirmed M. Arago's opinion. What motive, in fact, what important interests, could oppose this pious homage to a man whose premature death removed him in the midst of his labors, the importance of which was announced with great eloquence in the funeral oration above his grave only three weeks ago, where he was described as one of those rare and valuable men whose loss is immense and irreparable.

"This is unfortunately not the only instance in which the conduct of the Academy can be condemned. We refer now to the last election of a foreign associate. There are in the Academy eight places for foreign associates. These are the most important in the Institute, at least to foreigners, for the choice is made from the whole scientific world. In the first list of candidates, the name of Dr. Faraday was placed, and certainly no name more justly celebrated in all Europe could be found. How is it then, that in fifteen days afterwards, his name was erased from a new list of candidates, and to what motives are we to ascribe the conduct of the commission appointed to form this list, under the presidency of M. Arago, in suppressing the name of the illustrious author of so many works on physics and chemistry, and the worthy rival of M. Arago on the discovery of the laws of electro-magnetism?"

The *Débats*, after some further remarks, reflecting on the manner in which the elections are made, and animadverting on the influence which M. Arago exercises in the Academy, states, that at the last sitting of the Academy, M. Arago communicated the result of some experiments made for the purpose of ascertaining and measuring the different degrees of refraction in strata of air, according to the dryness or moisture of the atmosphere. M. Arago had particularly in view in these researches, the theory of the curious phenomenon of the scintillation of the stars, by means of the interference of the rays of light, which, by increasing each other's effects, or by destroying one another, according as the atmospheric strata through which they pass are more or less dense, or more or less humid, produce the alternations of light and darkness. The same apparatus is calculated to determine the refraction of different media, for example, of the atmosphere at the surface of mercury, slightly charged with the vapors of that metal, and of air impregnated with odorous exhalations; and it may even be used as a substitute for the barometer and the thermometer, in estimating the density and exact temperature of the atmosphere.

The *Journal des Débats* of Saturday last, in renewing its remarks on the influence of M. Arago in

the French Academy, states, that it has the satisfaction to announce, that the erasure of the name of Dr. Faraday from the list of candidates for the place of foreign associate, was an error of the press; but at the same time, it is hinted that this was an intentional error, as it was not corrected until after attention had been drawn to the fact of the omission, though many opportunities of detecting it had occurred.

It appears from the report of the proceedings of the Academy, in their sitting of the 1st inst., that the decision relative to the immediate election of a candidate in the room of the late M. Poisson, had occasioned dissensions in the learned body. The principal candidates for the vacancy withdrew their names, and the section of physics, when assembled to elect a successor to M. Poisson, had no fitting candidate on whom the honor could be conferred. M. Duhamel, a distinguished mathematician, was the only person who offered himself, and as he had no pretension to be a natural philosopher, the section decided to postpone the election. This decision of the section of physics occasioned much angry discussion, when reported to the Academy, and M. Arago and his friends animadverted strongly on the means adopted by a single section, of overpowering the voices of the majority of the Academy, which might be made a very injurious precedent. M. Gay Lussac, the president of the section of physics, which, it will be seen above, recommended the postponement of the election for six months, replied with much warmth to these attacks. He admitted the importance of the decision to which the section had come, which, however, had not been arrived at without a serious examination of the actual position of the Academy, its duties and its true interests. When M. Gay Lussac was asked to explain the reason, why all the other candidates withdrew their names, he avowed that they had done so by his advice. He declared that the Academy was perfectly free to make choice of any person whose name was not in the list of candidates, but that, as regarded the section of physics, their opinion was irrevocably formed; the Academy might send the question to them twenty times for reconsideration, and twenty times they would return with the same vote.

After this animated discussion, which prolonged the sitting for seven hours, the Academy divided almost equally between the proposition of M. Arago, to submit the question again to the section, and that of postponing the election for six months. The former proposition was carried by only a single vote. Thus, the section of physics will, at the next sitting, have to express its opinion again, after which, if their report be not adopted by the general body of the Academy, the election will take place without the concurrence of the section for which the member is to be chosen.

At this sitting of the Academy, M. Becquerel presented the fifth and sixth volumes of his *Experimental Treatise on Electricity and Magnetism*, accompanied by a magnificent atlas. He has united in these last volumes of his great work, the most important and most recent facts that have been discovered and published respecting terrestrial magnetism.

IMPROVEMENTS IN STEAM NAVIGATION.

A Commission was lately appointed by the French Academy of Sciences, consisting of Messrs. Arago, C. Dupin, Poncelot, and Seguier, to examine a new apparatus invented by M. de Jouffroy, for propelling steam vessels. The commissioners were present at some experiments made on the Seine to test the merits of the invention, and the following is the substance of their report, in which it will be seen the French commissioners re-assert that the invention of the steam-engine, and its application to navigation, belong to France. "Before announcing the results obtained, permit us to state the object

that M. de Jouffroy proposed to attain. M. de Jouffroy, the son of the man who first practically realized the immortal idea of Papin, has had his thoughts constantly directed to his father's invention. The result of numerous observations was, that the mode of impulsion adopted by his father after many trials, and since generally followed, was nevertheless ineffectual, as it only employed a small part of the power in directly propelling the vessel. The loss of power, he contends, arises from its missapplication by means of the paddle-wheel, which acts advantageously only during a small arc of the circle it describes. M. de Jouffroy is of opinion, that a considerable portion of the mechanical effect of the steam-engine is lost by the sudden concussion of the paddles of the wheels on the water at the moment of their immersion. The useless raising up of a large mass of fluid as the paddles come out of the water, also constitutes a serious drawback to the effective application of the power employed.

"Impressed with these inconveniences to which paddle-wheels are subject, M. de Jouffroy felt convinced, after long consideration, that the best plan would be to abolish the continued circular movement of the wheels, and to impart the motion to detached float boards, with an alternating action. The first object he desired to accomplish, was to obtain the greatest possible resistance in the liquid for the floats to act against; and he conceived he should accomplish this by increasing the size of the floats, and causing them to move through the water very rapidly. He thought, also, that the power would be much more advantageously applied, if brought to act in a direction parallel to the course of the ship.

In order to carry out these principles M. de Jouffroy placed at the stern of his steam boat two pairs of floats attached to long levers. These floats are composed of two moveable doors joined together by hinges, and may be brought near, or separated, so as to become parallel, or to form, in connection with one another, a very obtuse angle. A steam-engine imparts to these connected floats a backward and forward motion. The opening at an obtuse angle, is the position of the floats when in action; the parallel state, is that which they assume in returning.

The opening and closing of these doors in the floats is ingeniously managed by the oscillatory motion of the levers, and is produced by the different position of their centres of oscillation. The changes in their relative positions re-act upon the apertures with which they are connected, and cause their successive openings and closings.

This is a brief account of the mechanical contrivance employed by M. de Jouffroy to imitate, as he himself says, the action of animals in walking. Practical experience alone can demonstrate the correctness of his calculations.

The report of the commissioners proceeds to give the result of the experiments made with the apparatus on the Seine, in a small boat to which it was fitted, and set in motion by a high pressure engine. The speed attained was at the rate of from eight to nine kilometres (about five miles) an hour; but M. de Jouffroy had on other occasions propelled the boat eleven kilometres an hour. Owing to the weakness of some of the machinery, only half the power of the engine was employed. The vessel went up and down the stream, and during the whole time of the trial the propelling machinery acted with great regularity; but the commissioners, in their report, regret that a greater power could not be applied so as to come nearer to the general speed of other steam boats; nevertheless, they say, that taking into consideration the amount of power employed, compared with that of steam boats in general, the effect was decidedly in favor of the new apparatus. They observe, however, that as in this mode of impulsion the parts of which the apparatus consist, pass suddenly from a state of rest to one of rapid motion, they must necessarily be exposed to shocks which are likely by frequent repetition to break the machinery, or to put it out of order, and therefore no positive opinion can be

formed of its practical advantages until after many trials, in circumstances such as all steam boats are placed when navigating the ocean.

BELGIUM.

A large ship, freighted with machinery, recently sailed from Ghent for Vera Cruz, on account of a Mexican merchant. This is said to be the second similar cargo sent to the same party, within the last three months. The whole of the machinery was manufactured in Belgium.

By a decree of the King of Belgium, recently issued, the superintendence of all the railways has been confided to M. Simons. The eastern line from Ans to the frontiers of Prussia, has been divided into three distinct departments, each of which is to be presided over by a separate engineer. That portion of the line from Ans to the Meuse is entrusted to the direction of M. H. Maus, that from the Meuse to the Ourthe, to M. F. de Redder; and that from thence to the frontiers of Prussia, to M. Petit Jean.

A deputation from the society for promoting the cotton manufactures of Ghent, recently had an interview with the Minister of the Interior at Brussels, to request a more effectual suppression of fraud by means of the excise mark. If we are well informed, M. Liedts told the deputation that he would rather resign than impose an excise mark. A new deputation has since been appointed to proceed to Brussels, and to induce some influential members of the Chambers to introduce a law for the suppression of the fraud of foreign goods, which is carried on in the country to a great extent.—*Message de Gant.*

THE PROPOSED LOAN FOR RAILWAYS IN BELGIUM.

The Belgian government has laid before the Chambers a project of law for authorising them to borrow 90 million frs. on account of the railways. This project has met with serious opposition, and the central section proposes to reduce the loan to 65 millions. The 90 millions required by the government were intended to be appropriated as follows:—

1st. For the continuation of the lines of railroads already determined on, 40,571,000.

2d. For the paying off of 12 millions, of treasury bills issued, according to the law of the 28th December, 1839, for railroads and other roads.

3d. To pay the amount of 4,000 shares of the Rhenish railway, (33,349,000 frs.)

4th. For perfecting the construction of the roads and railways, 3,368,000 frs.

5th. To pay off with the surplus (about 5,511,000 frs.) the treasury bills issued, particularly on account of the Sambre canal.

The opposition of the central section to the amount of the loan proposed by the government, does not arise from any disposition to check the formation and completion of railways, but to the financial project of paying off the floating debt. The report of the central section states, that in proposing to appropriate only 40 millions for the continuation of the works on railways, they do not pretend that that sum is sufficient for their completion, but they desire that a portion of the sum required, six millions for the stations, and for materials requisite for the railways when in operation, might be postponed till 1843; and 12 millions of the proposed loan might, without any inconvenience, be postponed till 1842.

The discussions in the Chambers on these propositions, have been very animated; and the debates on them, which have been adjourned from day to day, have not terminated. Some of the representatives charge the ministers with paying

too much attention to railways; and allege that the other interests of the kingdom are sacrificed, for the sake of affording these increased facilities to passengers.

TRANSATLANTIC STEAM NAVIGATION.

The question of establishing a line of steam-packets between Belgium and the United States, has for some time past occupied the attention of the Belgian community. The subject is at present before the Chambers, and the commercial towns are making great efforts to induce the government to adopt the plan. The journals, too, for the most part advocate the formation of a steam-boat communication between Belgium and America, from which great expectations are entertained, as it is supposed that it would add greatly to the trade of the country, and would make Belgium the medium of communication between the greater part of Europe and the Western world.

The following remarks on the subject are from the *L'Independent*, one of the journals which strongly advocates the plan:—

“Though the discussion of the project for the establishment of Transatlantic steam-ships proceeds but slowly in the Chambers, the question has made great progress in public opinion. The doubts that were entertained by some, of the utility of the undertaking, have been removed, the objections raised against its necessity have almost entirely disappeared, whilst the favorable opinions that were entertained of it have continued to increase. The two or three journals which appeared disposed in the first instance to recommend the postponement of the subject to another session, appear to have abandoned that idea, and to acknowledge that such postponement would be injurious to industry and commerce. This change is no doubt to be attributed to the presentation of the French project on the same subject, and to the feeling which every one here should entertain of the necessity of Belgium being the first to establish such a communication with America, and of preserving the advantage of having had the honor to take the first steps in the matter. To reject this important means of increasing our exports, would be to admit the impossibility of Belgium competing with foreign manufacturers. The press is now almost unanimous in defending the principle of the measure, and in demanding that it should be carried without delay, and the commercial towns are beginning to petition for it. At Liege, and at Verviers, all persons engaged in trade, who are fully aware of the advantages they would derive from the undertaking, are quite alarmed at the idea of its being adjourned. They feel convinced that in the present state of competition between France and Belgium on this question, an adjournment of it would be equivalent to a rejection, the greatest chances of success being from the priority we should be able to obtain by acting quickly. At Bruges at Antwerp, and at Ostend, the same sentiments have been expressed as at Liege and Verviers.

Notwithstanding this alleged uniformity of opinion of the advantages of immediately establishing a Transatlantic steam communication, there appears to be considerable division in the Chambers on the subject. The report of the central section which was read on the 1st inst. after examining at length all the questions connected with it, comes to the conclusion that the interference of the government with the plan, should be only of a protective character. The report consequently recommends the adoption of a new project, to the effect that the government should be authorized to support the establishment of such a line of steam-boats by a subsidy, which should not exceed 200,000 francs a year for twenty years, and that this amount should be charged on the funds allowed for the budget of the interior, from 1840 to 1860.

PRUSSIA.

DEMISE OF THE KING.

His Prussian Majesty, we regret to say, is no more. His Majesty had been suffering for a long time past under anorexia, with privation of sleep and muscular power. Although of too exalted an intellect to entertain superstitious feeling, it was well known that he gave credence to an ancient prophecy that in the year 1840 the sceptre of the Prussian dominions would pass to the grasp of a younger hand. His Majesty had consequently prepared himself for the awful ordeal of death, and adopted such measures for the regulation of his family and of public affairs as could suggest themselves to so virtuous a mind and so well-ordered an intellect. His death took place on the 7th instant, at 3 o'clock, p.m.

His Majesty Frederick William III. of Prussia, was born on the 3d of August, 1770. He succeeded to his father Frederick William II. on the 16th November, 1797. In 1810 he lost his first consort, the daughter of the Duke of Mecklenburgh-Strelitz—the lovely Princess who endured such trials under the iron hand of Napoleon, and whose beautiful cenotaph every traveller in those regions has visited. He subsequently was united in 1824, by a morganatic marriage, to the Princess of Liegnitz, daughter of Count Ferdinand de Harrach. Although his Majesty was not above 70 years of age, the fatigues of war, and still more the severe trials of the agitated times in which he had lived, had been such as to produce that senility which is not reckoned by the number of years. Our readers are too familiar with the history of the last 40 years to require that we should recal the vicissitudes of his life. After the battles of Jena and Friedland this lamented Sovereign was nearly deprived of sovereignty altogether. After the latter decisive conflict, the Marshal Duke de Bellune may be said to have reigned in the name of Bonaparte at Berlin, whilst the King of the country, by permission of the devastating Emperor, was allowed to drag out his existence in retirement and sorrow at the suburban Palace of Charlottenburgh. Even when the union of all Europe against Napoleon had driven him from the throne, the population of the dominions of Frederick William, which amounts at the present day to more than 13,000,000, did not reach 5,000,000.

For many years past, the continuance of the life of this truly amiable Sovereign was a subject of anxiety to the representatives of all the great Courts of Europe. We may mention here, as an instance, a well-known anecdote. His Majesty, suffering some years ago from one of those occasional attacks of debility, consequent upon the former fatigues and trials of his life, fell down the main stairs of his palace. The Ambassador of one of the great Powers not being able exactly to ascertain the degree to which this accident had affected the important life of the Prussian Monarch, had a diagram and plan made of the stairs, the steps being marked with the letters of the alphabet. “The King of Prussia,” said he, in his despatch to his Court, “slipped at A, dropped down at B, was launched over the following letters, his head struck upon R, and he laid prostrate at Z. Now let your Excellency consult the architects and physicians, and let them give you an idea of what effect such a fall may produce on a man of his years.”

If such importance was assigned to the event of the death of Frederick William, how much greater is it at the present day. To him is principally to be attributed the peace that reigns amongst the great Powers of Europe at this moment. He it was who admitted Louis Philippe amongst the legitimate Sovereigns of the Continent, and allowed of the marriage of the latter's eldest son, which has consolidated his throne and perpetuated his race. We have said, that after the great campaigns of 1814 that even then the territories of the King of Prussia numbered only 5,000,000 souls. The remainder of the present kingdom has been made up of the Rhenish pro-

vinces of Stralsund and the Isle of Rugen, of half of Saxony, of a portion of Poland, &c., forming a most heterogeneous mass of subjects, and an empire of whose extraordinary form and position one may at once have an idea by casting a glance at the map of Europe. To these dominions, several states of which enjoyed a government of their own before the conquests of the French revolution, a constitution was pacifically promised, without its nature being defined, at the great congress after the war. The difficulty to accomplish this, to amalgamate the whole, and to suit the tastes and habits of such widely differing nations, was of course immense. The implicit reliance placed in his late Majesty made his subjects remain in peace, and obey him to the last; and even when the tenets of the Roman Catholic religion very lately deeply agitated his subjects, he was enabled, through the affection borne to his person, and the respect in which his character was held, to allay the storm. He appeased the feuds betwixt his aristocratical and democratic subjects by even-handed justice, and by a fusion and promotion of distinguished members of the middle classes, one of whom was the late Professor Ancillon, his Minister for Foreign Affairs, who, with Count Lottum, Baron Altenstein, Baron de Humboldt, recently Ministers of State, have preceded their master to the grave.

What will be the result of the loss of so gifted and conciliating a Monarch nobody can as yet foretell. The Prince Royal, now Frederick William IV., is forty-five years of age. He is infinitely more erudite and gifted upon general subjects than his father, but he has been generally known to entertain opinions widely different from those of his sire. An uncompromising enemy of revolution generally, and that of France in particular, connected as he is with Russia, upon which empire Prussia must ever rest as its greatest ally in its rivalry with Austria in the German Confederation, it has generally been apprehended that his accession to the throne might seriously involve that peace, under God's Providence, at present reigning on the continent. We have reason, however, to believe that there has only been, on the part of the Prince Royal, that resistance to the councils of the reigning Sovereign which has almost always characterised, in all kingdoms of Europe, the heir to the throne. Particularly since his last journey through and residence in the Rhenish provinces, and his becoming acquainted with their strong democratic and religious prejudices, the present Sovereign is said to have modified his opinions to the advantage of peace. We have only to add that, next to the decease of Louis Philippe, no event could more profoundly agitate the Cabinets of Europe than the demise of the virtuous Sovereign on whose grave we have respectfully cast these few hasty details.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

FATAL ACCIDENT ON THE CROYDON RAILWAY.—On Saturday night, about half-past eight o'clock, as a laboring man, named Winter, was in the act of getting into one of the carriages, near the Jolly Sailor, on the Croydon Railway, to come to London as a passenger, the train suddenly went on, when he was knocked down, and the wheels passed over both his thighs, which were smashed in a frightful manner. He was immediately brought up to Guy's Hospital, where he lingered in the greatest agony till 12 o'clock the same night, when he expired.

BRANDLING JUNCTION RAILWAY.—We are exceedingly glad to see that the Brandling Junction Railway is succeeding as a speculation beyond the most sanguine expectations. When all the works are completed, and its utility for purposes of transit become better known, there can be no doubt that it will become a most lucrative and flourishing

undertaking. The weekly receipts for passengers alone, since the beginning of February to the last week in April, have gradually progressed from £323 to £533, and its present revenue, calculated from the total weekly receipts at the present time, is some where near £40,000 a-year. — *Northern Times.*

THE EDINBURGH, LEITH, AND NEWHAVEN RAILWAY COMPANY v. HIBBLEWHITE.—COURT OF EXCHEQUER.—This was an action brought to enforce the payment of a call upon certain shares held by the defendant in the railway, the declaration in which was in a compendious form, given by the act of incorporation. To this the defendant had pleaded several pleas, and amongst others that no notice had been given to him of the call; that the Directors had not appointed any time or place, as required by the act, when and where the call in question should be paid, both of which pleas concluded with a verification. Besides these pleas, a third set up for defence that the Directors had exercised the option of forfeiting the shares of the defendant as given by the act, in which case no action could be brought to enforce the call thereon. These pleas having been specially demurred to, the Court heard argument on both sides.

The Court then gave judgment in favor of the plaintiffs. At the same time it observed, that the Court did not at all accede to the proposition of the learned counsel for the plaintiffs, when he contended that the Directors might sue on calls after the shares had been declared forfeited. The act certainly gave the option to the Directors, but could not possibly bear the construction, that after a step had been taken towards a forfeiture the Directors could revert to their right to sue.

REGULATIONS OF RAILWAYS.—The following are the principal provisions of Lord Seymour's "Bill for Regulating Railways":—Clause 1 enacts that no railway, which shall not have been opened before the passing of the Act, shall be opened until one month after notice has been given to the Board of Trade. 2. All railway companies are to keep such books and make such returns as the Board of Trade may require, relative to the maintenance of the railway, the traffic, expenses, tolls, accidents, &c. 3, 4. Penalty for each offence £20, and officers, making false returns deemed guilty of a misdemeanor. 5. Board of Trade may appoint inspectors, but no such persons to have an interest in the works. 6. Penalty for obstructing inspectors. 7, 8, 9. Copies of existing by-laws to be laid before the Board within two calendar months after the passing of the Act—otherwise to be void—no future by-laws to be valid till two calendar months after they have been laid before the Board, and sanctioned. 10. All provisions of Railway Acts requiring the approval or concurrence of a justice of the peace, or other person, not being a member of the company, shall be repealed. 11, 12. Prosecutions for infringement of Acts to be under the sanction of the Board of Trade, within three years after the offence. 13. Service of notices and document on one or more directors, or the secretary, or clerk, or by leaving the same at any station belonging to the company, to be deemed good service. The other clauses are immaterial.

GLASGOW, PAISLEY, AND GREENOCK RAILWAY.—This work daily becomes more interesting from the zealous struggle making to regain the time lost during the last wet season. The directors frequently inspect the works with the engineer, and are using every effort to open the line as early as possible. We find that although so much is finished, there are a greater number of men employed than ever, all the heavy points having double gangs, and the pick, hammer, and shovel are never idle throughout the twenty-four hours. Men can do much, but steam does more; and even here we have to honor the memory of our townsman, James Watt. The three thousand men employed are not equal in "moving power" to the locomotive and fixed engines toiling day and night also. The night scene is curious. The rattling of the locomotives through the rocky pass at West Ferry, and the

large fires blazing in every direction, and reflecting in their ruddy light the various groups of workmen, form a spectacle highly picturesque and gratifying to the lover of strange sights. The range of arches across the beach at Port Glasgow grow rapidly under the hands of their spirited contractor, Mr. Mackenzie, who, if we mistake not, is turning an arch a-week at this place. Carnegie Hill is alive with men. Bishopton is one continued cannonade from the blasting of the rock, with constant booming shots from the tunnels, and Barrangry Hill is already very nearly cut through. So rapid indeed, of late, has been the progress, that there seems little to complete, except at the points we have mentioned, and we hear that everywhere they are striving hard to have all through by the month of July next. We sincerely wish them a speedy and prosperous opening.—*Greenock Advertiser.*

WARWICK AND LEAMINGTON UNION RAILWAY.—Prospectives of a branch railway uniting the towns of Warwick and Leamington with the London and Birmingham Line, near the station at Coventry, have again been issued. It is anticipated that several landed proprietors who have hitherto resisted the proposed undertaking, will shortly withdraw their opposition.—*Leamington Courier.*

EASTERN COUNTIES RAILWAY.—The works on the railway at the London terminus are literally covered with workmen, and the rapidity of their proceedings may be judged of when we state, as a fact, that the Company obtained possession of the Dyers' Alms-houses at 11 o'clock one morning, and before the same hour the next, those houses were not only razed, but the concrete laid where they stood for the foundation of the arches. The bridge over Brick-lane is nearly finished, and there are very few arches now, about Webb-square and Wheeler-street, Spitalfields, to complete. The arches are not only built in and covered with cement, but a coat of asphalt is laid on them. On striking the centres, two arches lately gave way, but the damage was soon made good. The difficulty of getting possession of some small houses gave rise to a few curious incidents. In one case, the contractors having commenced pulling down an inhabited house, in which a cobbler lodged on the first floor, the latter continued in the centre of the room with his lap-stone and last, working at his calling, after they had not only unroofed the house, but taken down the walls to a level with the floor, and refused to stir until they would give him five pounds!

FRENCH RAILWAYS.—The Railway Committee held another meeting last week in Paris, and after hearing parties interested in the five companies affected by the Government bill, took into special consideration that part of the measure which relates to the lines from Lille and Valenciennes to the Belgian frontiers. The Committee approved of these two lines being executed by Government, not only on account of precautions that might be rendered necessary by the defence of the frontier; but also because the formation of treaties with Belgium might render it desirable that these lines should be in the hands of the State. The Committee was of opinion, that the termination of these lines was the more called for, since the Belgian lines to the frontier were already executed. The line from Lille to the frontier near Mouscron is 14,125 meters in length, or 47,000 English feet; and that from Valenciennes to the frontier near Quiévrain is 63,128 metres, or 43,000 feet; the first is to cost 1,000,000f., the latter 4,000,000f. The committee adopted this part of the bill almost unanimously, as also the lines and surveys as approved of by the administration of the Ponts et Chaussées.

It is stated in the *Fanal*, that a Director is to be appointed to superintend the operation of the railroads in Belgium, that are opened for public conveyance. The advantage derived from the appointment of a director to superintend the construction of the railroads has induced the government to carry into execution the same plan on the railroads actually in operation. M. Simon, the engineer, it is said, will have the appointment.

Much attention is at present paid to new plans

for improving the second class carriages on the Brussels railway. The present coverings of the windows, which afford insufficient protection against the weather, are about to be replaced by glass. The fares by the third class carriages, or wagons, are about to be reduced, so as to render conveyance by railway accessible to the poorer classes.

THE BELGIAN RAILROADS.—The traffic on the railroads during the year, may be divided into two periods; in one of which, from February to September, the business increases as the year advances; and in the other, which comprises the four months from October and January, it diminishes. Until the month of September, inclusive, the number of passengers and the receipts increase, and the increase is particularly apparent in the first months of spring. This explains the remarkable increase in the month of April last: during that month, there were conveyed 157,504 ordinary passengers, and 145 soldiers, making together 157,649 passengers. The total number who travelled by the railway in March was 136,620, of which number 1,009 were soldiers; so that in reality the increase of April over March amounted to 22,000 passengers. The total receipts in March, were 346,838 frs. 37 c.; in April, they amounted to 381,829 frs. 59 c. divided as follows:—ordinary passengers 295,881 frs. 20 c.; soldiers 69 frs. 43 c.; carriage of luggage 10,322 frs. 50 c.; of merchandise 75,456 frs. 46 c. The increase of 35,000 frs. is owing entirely to the increased number of passengers. The receipts for conveying merchandise remained the same. But it is by comparing the results of the present year with the last, that the great improvement on the receipts is more clearly manifested. The amount received during the first four months of 1839 was 900,000 frs.; in the four corresponding months of this year it exceeded 1,330,000; which is nearly one half more. This result is to be partly ascribed to the extended conveyance of merchandise by railroad; but the raising of the fares in February 1839 contributed greatly to that effect. It must be observed, too, that whilst the receipts were so enormously increased, the expenses continued nearly stationary. Thanks to the important improvements introduced by the directors, it is expected that the expense in 1840, for fourteen branches already opened, will not be more than they were in 1838, for eight or nine branches; so that all the excess in the receipts will go to pay the interest of the loans contracted to complete the railway. This excess, it will be seen, promises to be considerable. Besides, the improvements in the management have not yet ended, and the extent of the possible revenue to be derived is still less known; the conveyance of merchandise not having been completely organised, and the communications with France and Germany being yet very imperfectly established. It appears from the published table, exhibiting the produce of the railway in April last, and distinguishing the passengers by the different carriages, that of the total number, 157,500, 16,694 were conveyed in the first class carriages called diligences; that 46,304 travelled in the second class carriages called char-a-bancs; and that 94,506 were conveyed in the third class, or wagons. The inference drawn by *L'Indépendant*, from which paper we have abridged this statement, is, that the advance in the fares of the third class carriages, which was made last year, ought to be maintained, if not increased. By covering the wagons, it is said, and by thus removing the principal inconvenience to travelling in them, many of the passengers who would otherwise go in the second class carriages now choose the wagons, and many of those who would otherwise travel by the first class carriages, now take their places in the char-a-bancs. In April last, compared with March, the proportion of passengers by the diligences had fallen from 12 to 10½ per cent. of the whole; those in the char-a-bancs, from 32½ to 29½; and, consequently, the proportion of those who travelled in the wagons had risen from 55½ to 60 per cent.; that is to say, of every five passengers three go by the wagon. This is a most unfavorable division for the profit of the

railway; as even at the present prices it is contended the conveyance of passengers in the wagons affords no profit. “We certainly do not wish,” continues *L'Indépendant*, “that the coverings of the wagons should be taken away; but it appears to us that some revision is required in the fares of the superior classes of carriages, in order to induce passengers to go by them; and that such alteration is particularly necessary in the first class carriages. Notwithstanding the superior comfort they afford, their price is too high in comparison with the char-a-bancs: a difference of from 50 to 60 per cent. is too great, not to have an unfavorable effect in preventing passengers from availing themselves of the superior accommodation. In 1838, it was thought that the small number of passengers in the diligences was owing to the scarcity of coaches; now, however, there is a sufficient supply, and yet the number of passengers by them rather diminishes than increases. The profits from this conveyance of passengers in these coaches is, however, by far the greatest; for the cost of transport by them does not much exceed that of the char-a-bancs, or even of the wagons. This is an object we have already noticed, and we feel persuaded that the high fares of the first class carriages have a decided influence in the success of the undertaking. The result of this change in the division of the different carriages is, that the general average of their product has fallen from 1 fr. 92 c. to 1 fr. 88 c.”

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

“THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY,” may be forwarded, postage-free, to all the under-mentioned places:—

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“THE INVENTORS' ADVOCATE” is published every SATURDAY MORNING, at 7 o'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsagents, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the “INVENTORS' ADVOCATE,” will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS I to II, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

“E. L. James,” Prestbury.—We should have much pleasure in giving our Correspondent the information he requires, were it in our power; but unfortunately it is not. We do not think the machine in question is procurable in London.

“E. W.” Bath.—Such a circumstance, unsupported by other evidence, would not be an infringement.

“H. V. P.” Bristol.—It would only be a breach of contract, for which he would be liable to an action; but why not restrain him in an injunction?

“E. Williamson.” Glasgow.—Not under the late Act of 5 and 6 W. 4, c. 83. It cannot be done otherwise than in a court of equity.

“C. B.” Bartholomew Close.—Our Correspondent thus writes us:—“I shall feel particularly obliged to you, or any of your readers, who will furnish me, either through the medium of your periodical paper, or by letter, with a description of Professor Macatti's Anemoscope, and also that of Cavalier Marsillo Landriani's; having some time back invented an instrument for the same purpose. I have submitted it to the opinions of several scientific men, and they think—particularly Capit. Pascal and Lieut. Morrison—a good instrument of that kind very desirable for meteorological observations, &c. An early answer will further oblige, as I wish to know previous to sending a description of mine to society for their approval and use, upon what principles those are, which have been made and used by others. I am, sir, your obedient servant, &c. &c. June 10, 1840. [Can any of our readers give our Correspondent the desired information?]

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the “INVENTORS' ADVOCATE” is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of “THE INVENTORS' ADVOCATE,” (DELIANSON CLARK & CO.) at their “PATENT AGENCY OFFICE FOR ALL COUNTRIES,” 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, JUNE 13, 1840.

We cannot too often draw attention to the inactivity of our government, in matters connected with improvements in the arts and manufactures. The extraordinary want of encouragement—we might almost say the direct impediments thrown in the way—of such improvements, is still more remarkable when it is contrasted with the exertions making by other European states to promote the cultivation of all branches of industry, and to extend the formation of national works. The governments of most other countries not only offer rewards and confer honors on the discoverers and inventors of new processes of manufacture, and of new machinery, but they take an active and direct part in forwarding all those public enterprises, which are left

with us to be undertaken or neglected according as the spirit of speculation or the hope of individual gain dictates.

Nothing can more strongly mark the difference in the systems pursued by our government, and those of foreign nations, than a comparison between the Belgian Government and our own, in reference to railways. The Government of this country has not advanced any money whatever towards the construction of the many railways, either completed or in the course of completion, in different parts of England. If the prospective advantages to be derived from such an undertaking appear to certain speculators and capitalists sufficient to induce them to invest their money in the enterprise, a company is formed, and notice is given of their intention to apply to Parliament for a bill to empower them to execute the work. The fate of the bill depends much on the private interests compromised on the line it is intended the road should take. Previous consents of a certain number of the proprietors of estates through which it is to pass, must be obtained before the bill can be advanced through any of its stages, and these consents are generally purchased by some direct pecuniary sacrifice on the part of the company, or they are given with the hope of deriving some indirect advantage from the undertaking. After immense sums have been wasted in private jobbing, and in passing the bill through Parliament, the works are commenced and continued; still under private management, and by the application of private funds. The Government seems to consider it to be no part of its duty to interfere in the establishment and completion of these great national undertakings, but when the importance of the new means of communication becomes apparent, arrangements of the character of private bargains are made with the railway companies, for the conveyance of the mails. It is only when the enterprise is completed, and its advantages universally admitted, that it is honored with the notice of Government, and the principal interest railways possess in the eyes of British ministers would seem to arise from their being thought fitting objects for future taxation.

When we look to Belgium, we find that the formation of railroads is properly considered by that government as a great national question, and is brought before the legislative chambers as an important ministerial project. In addition to the large sums already advanced on the credit of the nation, for the establishment of railroads between the prin-

pal towns in Belgium, it is now proposed by the government to borrow ninety millions of francs for the completion of that object. The project of law empowering the government to effect this loan, is now before the Chamber of Representatives, and has given rise to much discussion. So differently, indeed, do the Belgian ministers view the importance of these undertakings, that they are charged by their opponents with neglecting the other interests of the nation in their anxiety to facilitate the means of communication. Another project of the Belgian Government, also under discussion in the Chamber of Representatives, is the annual subsidy of 20,000,000 francs, for fourteen years, for the establishment of a line of Transatlantic steam ships equal to those of England. The latter undertaking is regarded by the commercial and manufacturing interests of Belgium as of great importance, especially as the encouragement of similar means of communication with America has been determined on by the French Government.

The anxiety thus manifested by the Belgian ministers, actively to promote the manufacturing and commercial interests of the kingdom, cannot be too highly praised; and we sincerely wish a similar spirit animated the ministers of this country. Individual enterprise has already effected so much, that the Government imagines it may safely be left to effect all; but at a time when all our foreign neighbors are becoming manufacturers, under the direct encouragement of their governments, it is well worthy of serious consideration, whether we shall be able, working under the disadvantage of heavy taxation, long to maintain our manufacturing superiority over other nations, unless similar encouragement be afforded to the efforts of industry, and a more direct interest be taken by the Government in the improvement of our manufactures and the extension of public works.

LOSS OF MOTION BY FRICTION.

In an article "on the friction of wheel carriages" in our 31st number, we had occasion to allude to the great difference between the resistance to motion sustained at the axles of wheel-carriages, and at the circumferences of the wheels. We then stated it to be our opinion, that the loss of motion from surmounting obstacles by the circumference of the wheel, and that caused by friction at the axle, were not to be ascribed to the same causes, and that the resistance at the circumference when the

wheel does not slide or rub on the ground, is altogether distinct from *friction* in the ordinary acceptation of the term. This opinion has been questioned by an intelligent correspondent, and we will therefore explain our views on the subject more at large, and show the grounds on which the distinction rests.

When a ball is placed upon a smooth horizontal surface, and is at perfect rest, the point of the circumference which touches the horizontal plane may be considered as the apex of an inverted cone, through which the line of the centre of gravity passes. Now, as this point is exceedingly small, and as the centre of gravity is immediately above it, the least motion given to the ball will throw the line of the centre of gravity beyond the perpendicular; and the ball or inverted cone will have a tendency to fall. If we suppose it to be a cone, the effect of the slightest touch would be to bring the attraction of gravitation into operation on that mass of the cone thrown beyond the point of support, and to draw it towards the ground. By this action, the mass of matter thrown beyond the perpendicular line would each moment be increased, and it would fall with the gradually augmenting force of each particle of matter attracted. In the case of a ball, however, each particle of matter thrown beyond the first line of gravitation finds a fresh point whereon to rest, and instead of falling to the ground, it rolls on, by the continuance of the same action of throwing forward the centre of gravity. There is no rubbing of the circumference on the plane, and the resistance to motion arises from small protuberances over which the ball rises, and consequently it must lift its whole weight over the obstacle. When the inequalities of surface are so great that the impetus of the ball is not sufficient to raise its weight over them, the motion ceases.

Now in this case, the principle of the lever comes into action, and the power to surmount any obstacle presented to the motion of a rolling body depends, in a great degree, upon the diameter of that body. The fulcrum of the lever is that part of the circumference resting on the ground, the obstacle to be surmounted is the resistance, and the power, acts from the centre of motion placed above. It is therefore evident, that if the size of the obstacle and the weight of the rolling body continue the same, the power will increase in proportion to the diameter. A ball in motion may be considered as a rolling lever, in which the three acting points are continually vary-

ing. If we suppose an axis to be added to the ball, to which the moving power is applied, we then obtain an additional resistance, arising from the rubbing of the surfaces of the axis. It is this second resistance which constitutes *friction*, and it may be increased to such an extent, either by the use of the axle, the nature of the rubbing surfaces, or their pressure against each other, as to deprive a body of more than half the motion given to it. In the case of a rolling body, it will be perceived, there is no rubbing of the surfaces whatever, and the retardation of motion will not, generally speaking, be affected by the quality of the surfaces, if they be equally smooth, so as to present the same obstacles to be surmounted.

It may perhaps be imagined, that the distinction we have drawn between the resistance encountered by rolling bodies, and the resistance from friction, strictly speaking, is in fact of no moment. But an error of this kind, if error it be, may lead to false conclusions in many problems of mechanical science.

As a rolling body overcomes the obstacles to its motion by the force of gravity acting with the power of a lever in raising it over them, it appears to us that the term friction is altogether inapplicable to such action and resistance, and that it might with almost equal propriety be applied to the resistance of a weight, raised by the direct action of any of the mechanical powers.

NEW INVENTIONS.

IMPORTANT IMPROVEMENT IN LITHOGRAPHY.

The following account of an important discovery in Lithographic printing, is given in the *Moniteur Industriel*:—"Notwithstanding the numerous and great improvements in lithography, it has hitherto been a difficult, minute, and delicate operation. M. Perrot of Rouen has invented a simple and complete machine, by which, not only will the skill and artistic talent hitherto required in lithographic printing be rendered unnecessary; but by its use, the importance of the discovery of Senefelder will be increased in an extraordinary degree. A few words will suffice to make known the difficulties that have been removed by the invention of M. Perrot, and the revolution which his machine cannot fail to produce in the art of printing.

"Lithography, from the time of its discovery in Germany, has been gradually improving, and so far as the chemical part of the process is concerned, there is little to be desired. In fact, the choice and preparation of the stones, the manufacture of the crayons, of the ink, and of the inking varnish, the construction of the rollers, the retouching and revival of the designs, the different processes by which the drawings are made, and the mode of printing in colors, all this has been modified, improved, or invented. But beyond these improvements, nothing, or next to nothing, had been done. In order to give an idea of the difficulty and length of time required in the

usual methods, we will just enumerate the different processes. The separate operations may be divided into seven: 1st. to wet the stone prepared with the drawing; 2d. to grind the ink and the varnish, and to spread the composition equally over the roller intended to ink the stone; 3d. to apply the ink upon the parts of the stone prepared to receive it; 4th. to lay on the paper for receiving the impression; 5th. to cover the paper with the cloth and tympan of the press; 6th. to press the whole in a proper manner, to fix the design on the paper; 7th. and lastly, to lift off the impression thus obtained, and to place it upon those before made. All these operations are not equally difficult; but the wetting of the stone and the inking, require great care and skill, and are frequently very imperfectly done.

"The Society of Encouragement, in 1826, stated the inconveniences attending the existing methods of lithographic printing, and offered two prizes, one for an improved press, and the other for a new mode of inking, but without success; and lithographic printing remained in the same state from 1826 until now, when M. Perrot has produced a machine which has solved the proposed problems. M. Perrot already holds the first place among our ingenious mechanists. It is to him we are indebted for the *Perrotine*; that ingenious machine which prints with precision and astonishing rapidity the most elaborate patterns on papers and silks. He has now exercised his ingenuity in improving the art of lithography, and he has constructed a machine that is not at all complicated, with which one workman may produce in ten hours from 3,600 to 4,800 good impressions, instead of 500 or 600, as by the ordinary methods. Three of these machines moved by the power of one horse, and superintended by one workman, may produce in ten hours eighteen thousand good impressions. We will not stop now to inquire what will be the results of this discovery. If we were to express all we think on the subject, we should be accused of exaggeration; and yet there can be no doubt that the *lithographic Perrotine* will produce most important effects. Without taking into consideration its applicability to drawings and designs of all descriptions, it may be applied to the purposes of typography; and this innovation may completely change the mode of publication of the journals, and of other light literature."

[We wish our foreign contemporary had given a description of the machine which he eulogises so warmly, that we, on this side the water, might have been able more fully to enter into his transports, and have grounded our expectations of the success of the discovery, on some more certain basis. If the machine accomplish one quarter of the work which is here mentioned, it will indeed become a valuable addition to the typographical art.]

NEW FAULCHION FOR THE ARMY.

One of the most effective and soldierlike instruments (for it combines the qualities of a weapon of offence and defence, as well as a pioneers' tool), has just been issued to the field battery men of the battalions of royal artillery, the old cavalry steel-mounted sabre being abolished and substituted by a faulchion, the blade of which is broad and heavy, cut and thrust point, has a powerful edge, and at the back is armed with a stout row of teeth twofeet in extent, which is intended for the purpose of being used as a saw, either on the *bivouac* or the *escalade*. The mountings are all of brass, and the length of this formidable weapon is shorter than the one discarded, being 2 feet 6 inches, instead of 39 inches, it having been observed by the Master General of the Ordnance that he held with the opinion expressed on the blade of a sword he met with in Spain, "that if this fails, it is the courage, and not the weapon that is wanting." A new broad buff belt is also substituted instead of the old regulation sling belt (at present in use generally by all mounted officers and men). This belt, which is technically called a "frog," is, however, a decidedly

dangerous change, as the sword is brought by it close up to the hip joint, and in case of accident, a man is nearly certain of his ribs being staved in with it, as well as being totally unfit for cavalry service; the "frog" belt has for many years been worn in undress by infantry officers, and long complained of by them as a sore inconvenience; it may be readily imagined how totally unfit and improper its adoption is for cavalry, when the infantry, mounted officers, as field-officers, adjutants, aides-de-camp, deputy quarter-master general, brigade-majors, &c., are allowed to wear the sling belts. These equipments are to be worn for the first time to-morrow (Sunday), the old sabres and belts being ordered to be returned into store on the new issue, which has already taken place.

CLEGG'S ATMOSPHERIC RAILWAY.

On Thursday last, the scientific world were entertained with Messrs. Clegg and Samuda's atmospheric railway experiments, made for the first time, on that part of the Western railway situated near Wood-place, Shepherd's-bush.

To give our readers an idea of this improvement on the inventions of Messrs. Hague, Pinkus, and others, we will briefly state the working parts of the machinery, and then leave them to judge how far it can ever be brought into general use.

The railway is half a mile in length; and between the rails on which the carriage runs, is a tube about 12 inches diameter, with a three-inch slot on the upper surface; in this slot are fitted valves or lids, the whole length of the tube; so that, in commencing at the half-mile terminus of the rail leading from the stationary engine, a piston supported by an arm projecting from the under part of the carriage, enters the tube by an opening; and the arm, heated by a charcoal fire, lifts up the valves or lids which are cemented down.

The improvement simply consists in the method of lifting the cemented valves or lids, and pressing them down immediately after the arm has passed them, by a small wheel or roller attached to another arm projecting from the under part of the carriage.

On the piston rod of the piston that enters the tube, is a narrow wheel, which, in our opinion, raises the valves or lids in place of the heated arm; inasmuch as this wheel in supporting each lid connected by laps, is full an inch above the interior of the tube. A quicksilver gauge indicated when the half-mile tube was sufficiently exhausted by the stationary engine, which, according to our calculation, took about ten minutes or a quarter of an hour before the carriage, of three tons weight, including passengers, commenced moving at a walking pace, and then to full speed; completing the half-mile in two minutes and a half—or at the rate of 12 miles an hour.

Considering the quantity of friction caused by the piston (which must collect the cement from the slot), and the lifting arm preceded by the narrow wheel running in the tube, as well as the wheel running over the valves or lids, to close them air tight,—we may safely say the engine of 16-horse power performed its work in exhausting the tube, while the carriage was running the half-mile on an inclination of one foot in 12° against so much friction.

We reserve further comment until we have witnessed a second experiment.

VARIETIES.

The Extraction and Preparation of Ochre in the Manufactories of Souilly and Pourrain.—In these two places, the extraction of the argillaceous earth is effected in open quarries, as it lies near the surface. When the workmen have laid bare the different strata of ochre, it is selected with much care. They sort and place it in different heaps, consisting of the inferior kind, or common ochre, the

fine ochre, and that containing almost pure hydrate of iron. As to the last stratum, of peroxide of iron, which is called iron rust, it is in part thrown away; those portions which are the most argillaceous and the least compact only being used. These different varieties are spread out, and put to dry in the air, upon flat boards joined together, and placed near the quarry. When the process of drying is nearly completed, each kind of ochre is carried to the warehouse to be differently treated. The two first, the common ochre and the fine ochre, are used to make yellow ochre, and the others are used for making red ochre. The common ochre is kneaded with water, and after having been well washed, it is moulded into lumps, which are dried in the air, and sold in that state as *common yellow*. The fine ochre is pounded, after being completely dried, in stone mortars. The powder obtained in this manner is sold as *fine yellow*, of first and second qualities, according to the degree of fineness. The red ochre requires a greater number of preparations. There are three qualities of it made, the common red, the fine red, and the Prussian red. The common red is made with the fine pure ochre; the fine red is formed by a mixture of the fine ochre and the coarse; the Prussian red is composed of coarse, mixed with the quality called *gruan*. These different kinds are kneaded with water, and moulded into lumps, which, after having been dried in the air, are placed in a common brick oven, and heated till they have lost all the moisture which holds them together; they are then pounded, sifted, and burnt, and put into casks. The common red is of a very bright red color; the fine red has a deep red tint; and the Prussian red ochre is the color of bricks. Some makers brighten the color of the last, by moistening it with hydro-chloric acid. This manufacture, which is simple and easy, enables the manufacturers to offer large quantities for sale at a very low price.

The project for cutting through the Isthmus of Panama is, it seems, at length about to be realised. Transports have been freighted by a number of French engineers for the conveyance of tools and materials of all sorts, necessary to the undertaking; and the formation of the canal will be commenced immediately on their reaching the Isthmus. While labors like these, combined with the applications of science to the principles of locomotion, are rapidly breaking down the physical barriers by which the races of men were for so many ages kept apart, and making the resources of all available for each, the universal diffusion of knowledge, under identical forms, is helping on the good work,—destroying all the fences and restrictions which formerly made society so picturesque—and incommodious. From countries of which, half a century ago, our knowledge was so vague and shadowy as to belong to the domain of fable, men are sending forth their sons for a European education, with misgivings no greater than a country gentleman of the last century felt on dismissing his heir to Cambridge or Oxford. From the land which Bruce reached with so much toil and danger, and afterwards described to an audience so unbelieving, we announced, a week or two ago, the arrival of certain youths, for instruction in Rome and Paris; and more recently, we observe that the Turkish government has sent from the country of the Prophet a number of young Mussulmans to complete their education in the latter city—one of the high places of the Infidel. The world is likely by and bye to intercommunicate by common signs—to have something like universal media by which its several parts may get at each other's meaning. After all, we are not, on this account, deeply grieved for the dealers in romance; because the world, under any of its modifications, will always present them with materials enough for their labors—and the changes which are robbing it of many quaint aspects, are replacing them by features far more magnificent, and materials of boundless scope for active imaginations. But what is to become of that excellent class of persons, whose sympathies move in small circles, and whose humanities are bounded by a meridian?

—who believe the attitude of universal distrust to be the wise one, and of universal defiance the safe one! Surely these ancient gentlemen will be glad to shrink into their graves, from the cosmopolitan spirit that is abroad, scattering all those wholesome prejudices and patriotic distinctions which they nursed with such tenderness, and watered with so much blood, in the good old days of the war-time! —*Athenaeum.*

Society for promoting Practical Design.—A general meeting of the members of this society took place on Friday evening last, at their great room, Saville house. Mr. Ewart, M. P., president of the society, took the chair, assisted by Mr. Ashton Yates, M. P., Mr. Foggo, Mr. S. Smith, Mr. Nicholls, and a number of gentlemen, friends to the arts. Mr. Crosby, the honorary secretary, read the report of the committee upon the state of the schools, and affairs of the society. It stated that within the last two years, 400 students had been instructed in the schools, in the principles of the particular branch of art the student was afterwards to follow. That the schools were most popular among the pupils, upon account of the free drawing there practised, the energy bestowed in their instruction, and the low charge of admission. That the present number of pupils was 74, a large number at this season of the year. It appeared, however, that the subscribers had fallen off, and fresh exertions were necessary to relieve the society from the difficulties it had to contend against through want of funds. The report concluded with an extract from a letter of Benjamin Haydon, the historical painter, who therein declared his opinion that the schools of the society had done much for the arts, and it would be a disgrace to the country were they allowed to sink. After considerable discussion, the members determined to give their utmost support to the institution; and after voting thanks to the Chairman, Mr. Ashton Yates, and Mr. Crosby, for their services and support, the meeting separated.

Steam Carriage Trip to Brighton.—Last week, a steam-carriage started from Deptford to Brighton, returning next day to the Elephant and Castle, with passengers, having made its journey in three hours and a half. The route taken was through Cuckfield, Reigate, &c., and the trip gave general satisfaction to the passengers; but even the advocates of steam-carriages on common roads were rather shaken in their sanguine expectations that such a mode of travelling can be made generally available on common roads, the short and steep hills being a great detriment. On the road down, the speed was much retarded in going up Red-hill, in consequence of the station for taking in water being fixed at Coombs-mills, a little before the rise of the hill, and the cold water checked the power of the steam. The fare charged was 5s. each person, and the novelty of course drew a full complement. This is the second trip of the sort which has been taken within a month, but they have been merely experimental.

Rotterdam, June 4.—(Extract of a letter.)—“To show the great facility afforded to the traveller by the introduction of steam-navigation, I would instance the case of the General Steam Navigation Company's packet Ocean, which arrived here this morning from London in 22 hours, and in time for passengers by her to the Rhine, embarking on board the Dusseldorf Company's steamer of this day, so that the distance from London to Emmerich will have been accomplished within the short space of 36 hours.”

Brussels.—The projet de loi, respecting steam-navigation, for granting a subsidy of 400,000 francs a year for fourteen years, not only authorises the Belgian government to encourage the establishment of steam-ships between Belgium and the United States, but expressly declares that the establishment shall comprehend other lines of steam-navigation, if their utility and practicability be admitted. A correspondent of *L'Emancipation* anticipates that when the line of steam-boats to the United States is

opened, it will be the means of bringing numbers of foreigners to Belgium, to avail themselves of that means of communication, and passengers, it is also contemplated, will even go there from England, when there are no English steam-ships on the point of departing.

The Royal George.—Since our last notice of the operations on the hull of the Royal George, much wreck has been brought on shore, among which are entire deck beams, the stanchions or wooden standards of the orlop deck which rested on the keelson, some fragments of the after part of the keel, with the dead wood framed into them, attached to which are strong connecting plates of brass, the stanchions of the pump, well, or shot-locker at the main hatchway, with two vertical rabbits, into which the bulkheads connected with it were inserted; all this shows that the wreck from the stern-post to the main hatchway is completely thrown abroad, and that little now remains to do but to pick up the fragments. Besides the two divers, George Hall and Fullager, two others of the corps of royal sappers and miners have commenced with considerable promise; one, a private, Andrew Duncan, who distinguished himself before he entered the service by saving several lives by swimming, for which he received premiums from the Royal Humane Society: to this man, however, a trifling accident, luckily attended with no serious consequence, happened on Thursday morning, owing to one of the riggers, who had charge of the life line having allowed it to become too slack, in consequence of which he fell down, which rendered it necessary to haul him up, as his helmet was full of water, and he had become senseless, or nearly so, but he soon recovered, and this spirited young soldier is ready to dive again; it was only the second time he had been down, the first time he got up a beam. Corporal David Harris has also been diving for several days with great activity and success. This morning an iron 32-pounder and two gun-carriages were got up, and about two dozen bottles of wine, but the quantity of wreck recovered during the last two days has been rather smaller than usual, so that Col. Pasley has directed two charges to be fired on Monday next, one of 260 lbs., the other of 47 lbs., at the mid-day slack tide, and it is probable that a large charge of upwards of 2,000 lbs. will be fired at the next neap tides, that is in about a fortnight from this, probably on the 22d inst. Several small charges have been fired during the week, as the mud has become more troublesome than usual, and will continue so, as long as any great quantity of wreck prevents the current from carrying it off either by the flood or ebb tide.—*Hampshire Telegraph.*

Effect of Beet Root Sugar on Foreign Colonial Sugar.—Whilst the cost of home-colonial sugar is enhanced in Great Britain by diminished production, the price of foreign colonial sugar is kept down, consumption lessened, and stocks accumulated by the extension of the beet-root manufacture throughout the whole of continental Europe. In France, the quantity of beet-root sugar produced ascended to 40 or 50,000,000 kilogrammes, and was a great source of the prosperity of the sugar refineries in conjunction with the bounty or drawback on the export of refined sugars. According to accounts in the Dutch papers lately, the manufacture of sugar from beet-root was extending there rapidly, and one establishment is cited at Vosterwick, in Guelderland, which alone consumed in the process from 4,000,000 to 5,000,000 lbs weight of beet-root per annum. In Prussia and Central Germany the same efforts were making to extend cultivation; the average yearly production from 1836 to 1838, for which alone the returns are given in the paper, being estimated at about 11,000,000 lbs weight of sugar. But it is calculated that the quantity now made is very considerably more. Austria was not behind in the same branch of industry and cultivation. At the close of 1838, the quantity of sugar produced from the beet-root exceeded 9,000,000 lbs weight or from 12 to 13 per cent. of the whole annual consumption, calcul-

lated at about 115,000,000 lbs. In Bohemia alone, the number of beet-root sugar establishments is stated for October 1838, in the *Commerce*, French paper, at 87. In Russia the cultivation and manufacture of beet-root sugar was equally on the increase, and was pushed with great activity, and in numerous instances the culture of hemp had been abandoned for that of beet-root sugar, to which the peasantry were encouraged by premiums from the land proprietors. In Moscow and the neighboring Governments, the beet-root establishments are said to have increased in number since 1832, at the average rate of 40 per annum. It is not to be wondered at, in the face of these facts, that foreign colonial sugars should no longer be in the same demand abroad as formerly, and that the prices should be sensibly lowered, whilst the stocks in bond here accumulate to such an extent.

Specimen of Art.—The iron viaduct, on the Manchester and Birmingham Railway, is just completed, and reflects the greatest credit on all parties concerned in its construction; the design (by Mr. Buck, the engineer to the company) has been carried out with considerable skill by Messrs. Bramah, Fox, Grazebrook, and others, employed in its execution. The weight of iron is about 580 tons. The erection crosses the line of the railway at Fairfield-street, Manchester, at the acute angle of 24 $\frac{1}{2}$ degrees, which is a greater obliquity than that of any arch hitherto erected in Great Britain. The abutments are constructed of massive pieces of the Summit stone; and each abutment is divided into six compartments perpendicular to the ribs composing the bridge. The joints of the masonry are parallel to each other—an adaptation to the circumstances of the case—which secures its binding together. The bridge consists of six arches, or ribs, tied together by diagonal braces. The span of each rib is 130 feet; the height of the arch from the springing line 12 feet; the height of the roadway 24 feet; the height, from the pavement to the top of the rails, 30 feet; and to the top of the parapet, 36 $\frac{1}{2}$ feet. Each rib is the segment of a circle, whose diameter is 357 feet.—*Mining Journal*.

Interesting Literary Discovery.—We are informed, on good authority, that our townsman, Professor Lee, D.D. of Trinity College, Cambridge, of Bristol, has recently discovered a work which will be highly valued—not only by the general scholar, but especially by the Theological student. This indefatigable Oriental scholar has brought to light, in a Syriac translation, one of the lost works of the celebrated Eusebius, author of the Church History. The history of the discovery, we are informed, is this.—Some time ago, the Rev. H. Tatham, of Bedford, went to Egypt for the purpose of collecting Coptic manuscripts. In visiting some Syrian monasteries in the desert of Nitria, he had the good fortune to purchase about forty manuscripts of great age and interest. These on his return to England, he sent to Professor Lee, at his Rectory at Barley, in Hertfordshire, in order to have their contents ascertained. In his inquiry, Dr. Lee, discovered the lost work in question. The history and contents of this work are very interesting: The first notice of it is in Jerome's Catalogue of Ecclesiastical Writers. It is there said to contain five books, and to have the title following viz.: Περὶ θεοφανειῶν i. e. *On the Divine Manifestation*; meaning the Revelation of God in Christ. Ebed Jesu, the Metropolitan of Soba, in Mesopotamia, also speaks of it as a work of Eusebius, and tells us that it exists "in the Syriac." Of the Greek original he says not a word. Cave, Fabricius, and Valarsius, speak of it as being a lost work; and from the manner in which they mention it, there can be no doubt they were perfectly ignorant of its character and contents. The Manuscript, now discovered by Dr. Lee, is certainly not less than one thousand years old, and probably reached much nearer the period of the death of our Saviour. It is beautifully and accurately written, and quite complete in all its parts. It contains five books, as Jerome had said; and proceeds with its subject in

the following manner: It argues, in the 1st place against both the Atheist and Polytheists from Natural Religion, very much in the manner of Paley's "Natural Theology;" —in the 2nd place, it proounds the doctrine of Creation as the work of The Word, or Son, of God. This the author urges both from the Scriptures and from other considerations: he then goes to the Prophecies foretelling the revelation of this Being, and thence urges this as a fact: in the 3rd place, he argues from the Predictions made by our Lord himself, in the several Gospels, and proves from these, as fulfilled or as fulfilling in his day, that this Revelation could not be less than divine. Josephus, the Jewish historian, is occasionally quoted, and particularly his celebrated and much controverted declaration respecting our Lord. Such is the mere outline of the work. We understand it is the intention of the Rev. Dr. Lee to give the whole to the public, both in the Syrian language, in which it was discovered, and in an English translation, with Notes. In the meantime, it will be interesting to the public to know that this work is in existence, and that its appearance may be expected at no distant period, in an English dress. The following is the passage (alleged by some writers to be an interpolation)—in Josephus's Antiquities of the Jews, book xviii. chap. 4, as cited in this now discovered work of Eusebius:—

The year of the world 3998: and after Christ's birth 36 years.—At that time was Ieefs a wise Man, if it be lawful to call him a Man. For he was the performer of diuers admirable workes, and the instructor of those who willingly enterteine the truth: and he drew vnto him diuers Iewes and Greeks to be his followers. This was Christ, who being accused by the princes of our nations (Jews) before Pilate, and afterwards condemned to the Crosse by him; yet did not those who followed him from the beginning, forbeare to loue him for the ignominie of his death. For he appeared vnto them aliuie the third day after, according as the divine Prophets had before staled the same, and diuers other wonderfull thinges of him: and from that time forward the race of the Christians, who haue deruided their name from him, hath never ceased.—*(Lodge's Translation of Josephus.)*

The work which Dr. Lee has undertaken, is arduous. The Syriac manuscript, now discovered by him, contains twice the matter of our English New Testament: this he has undertaken, first to transcribe from the Syriac; and then to translate it into the English Language. We ardently hope that his health will be sustained during his enthusiastic labor.—*Shrewsbury Chronicle*.

Sugar Duties.—A few evenings since, a numerous meeting of the London Coffee and Eating-house Keepers, was held at Anderton's Hotel, Fleet-street, "For the purpose of considering the propriety of an equalisation of the duties on sugar." Mr. Hinton, of Blackman-street, Borough, being called to the chair, said he thought it would not be assuming too much in asking for a reduction in the amount of the duty on sugar, when it is well known the quantity used by their trade, every year, amounted to between 1,600 and 1,700 tons. Several other speakers addressed the meeting at great length; and a petition, embodying the views of the chairman and others, was ultimately adopted, and entrusted to Mr. Ewart for presentation.

Forest Trees of Guiana.—The fitness of the timbers for naval architecture is unparalleled, and in some instances is said to surpass the teak. The greenheart, the mora, and souari or sewarri, of all other woods, are most unquestionably the best adapted for ship-building. Within the last ten or twelve years a considerable quantity of brown greenheart has been sent to Liverpool and Greenock; and I have been told that builders and others interested in shipping are now of opinion, after ten years' trial of the wood, that in strength and durability it is superior to any oak, and it actually commands a higher price. Had these woods been introduced and extensively employed in the dock-

yards fifteen or twenty years ago, it is the opinion of competent judges that we should not now hear much of dry-rot and Kyan's patent; and not to mention the rapid decay of vessels built of English and African oak, and the consequent frequent repairs, with what saving to Government would it not have been connected! If, therefore, the attention of the navy-board could be drawn to the important fact, that British Guiana can furnish the finest and most durable wood in the world, in sufficient quantities to supply all the ship-building establishments in Great Britain, a double benefit would arise from it, namely, the saving to Government and the increased demand for the natural production of the colony. The first experiment might be made, to establish a dock-yard for the repair of such of her Majesty's cruisers on the West India station as draw not more than eighteen or nineteen feet water. The outlay of such an establishment would be very trifling, if the importance of ultimate success be considered. The woods, which are qualified for ornamental purposes, vie in elegance, if polished, with any in the world. The want of laborers is the great cause that these treasures lie comparatively hidden, and have scarcely excited attention. The demand in the colony has been so great for native woods, that those who are at present employed in that trade are not able to meet it.—*Schomburgk's Description of British Guiana*.

THE ARCHIMEDES STEAM-VESSEL.

This vessel, the first which has been fitted with Mr. Smith's recently-invented propellers, arrived here from Portsmouth, on the evening of Friday last. During the following day, and on Monday and Tuesday, she was visited by a great number of persons, curious to inspect this novel method of applying the powers of steam. A description of the machinery having already been published in a recent number of the *Telegraph*, need not be repeated. Wednesday was the day fixed on for a trial cruise, when there were on board, by invitation of the directors of the company to whom the Archimedes belongs, Sir Graham Moore (Port Admiral); Admiral Superintendent Warren (second in command); Major Gen. Ellice (Commander-in-chief, Western District); Colonel Sir George Hoste, R.N.; Captain Barnard (Cambridge); Captain Mansell and Commander Knox (Rodney); Capt. Pring (Inconstant); Mr. Walker (Harbor Master); Mr. Henderson (Master Attendant, Dock-yard); with several other naval and military officers; principal and subordinate officers of the Dock-yard, &c. &c. A better day for testing the merits of the invention could not have presented itself—wind strong W. by N., with a cross, chopping sea. It was purposed on starting, to proceed round the Eddystone, and the vessel passed her moorings at 12h. 20m. P.M., with steam alone. In this way she ran, until the Ramehead was fairly opened. The wind had freshened by this time, and veered round to W. by S.—At 1h. 20m. the propellers were detached, and she proceeded under sail alone to within about two miles N. E. of the Eddystone, when she was put about, and propellers were again connected. When within the Breakwater, the sails were taken in, and the vessel backed for the purpose of showing the action of the screw in that direction. She then ran into harbor, and threaded her way among the ships in ordinary in the most admirable manner, going twice round the San Josef, nearly close to the ship.

The following is the rate of progress she made during the cruise:—

Steam alone (wind ahead).....	8 $\frac{1}{2}$ knots.
Sails alone (wind on beam, pretty much sea)....	6 $\frac{1}{2}$ to 7
Steam and Sails	9 $\frac{1}{2}$ to 10 $\frac{1}{2}$

In forming an opinion on the merits of the invention, we have not trusted so much to our own judgment as to that of several scientific gentlemen who were present, who, as far as we can learn, are unanimously of opinion that the performances of

the vessel were of the highest character. The agitation of the water attendant on all boats propelled by paddle-wheels, is entirely avoided, no commotion being excited more than by a sailing vessel. While steering, the Archimedes is under admirable and easy command of helm (a matter of great importance), and she can be converted into a sailing vessel, by detaching the propellers, in the short space of three minutes. If under sail the vessel be much inclined, the propellers act with the same freedom and steadiness as if she were upright; in addition to all which, we may mention the almost entire absence of that tremulous motion usual in steamers, which is so disagreeable to passengers and injurious to the vessels. In conclusion, we should remark, that the unreserved manner in which Mr. Smith and the officers of the boat communicated every information relative to the machinery, assisted by a model and drawings, created a general feeling of good wishes towards the inventor, and the gentlemen embarked with him in the undertaking. The Admiralty have taken a most judicious step for ascertaining the merits of the screw-propeller, by appointing Captain Chappell, R.N., a gentleman whose scientific attainments and skill as a seaman eminently qualify him for the duty, to accompany the Archimedes during her trial trips, and to report on the same to their lordships. She left on Thursday for Falmouth, whence, after a stay of one day, she will proceed to Bristol.—*Devonport Telegraph*.

Since we noticed this account in the *Devonport Telegraph*, which the press of other matter prevented us from inserting sooner, we are informed that the vessel has been inspected by the leading interests connected with steam at Bristol, and at her Majesty's dock-yard at Milford, all of whom have expressed themselves highly satisfied with it.

Mr. Guppy, director of the Great Western, proceeded in the Archimedes to Liverpool, where she has now arrived, and we have no doubt that the most convincing reports of the importance and utility of Mr. Smith's application of the screw will be added to the list with which he is already largely provided.—*Morning Chronicle*.

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING JUNE 15TH, 1840.

Monday.	Statistical Society.....	8 P. M.
	British Architects.....	8 P. M.
Tuesday.	United Service Institution....	9 P. M.
	Linnæan Society.....	8 P. M.
	Horticultural Society	3 P. M.
Thursday.	Electrical Society.....	8 P. M.
	Royal Society.....	8½ P. M.
	Royal Society of Antiquaries..	8 P. M.
Saturday.	Royal Asiatic Society.....	2 P. M.
	Mathematical Society.....	8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

SOCIETY OF ARTS.

The distribution of the prizes given by the Society for the Encouragement of Arts, Manufactures, and Commerce, took place a few days since at the Society's house in John-street, Adelphi. A large number of persons assembled to witness the interesting ceremony. His R. H. the Duke of Sussex took the chair, and after making a short speech, explaining the objects of the meeting, his Royal Highness proceeded to distribute the prizes to the respective candidates in the following order—these rewards having been adjudged by the society during the present session :—

IN MECHANICS AND OTHER PRACTICAL ARTS.

1. To Mr. James Hopkins, Globe Brewery, Horseleydown, for his setter for a carriage, five guineas.
2. To Mr. W. Stidolph, 17, Lower Belgrave-street,

Eaton-square, for his frame for teaching the blind to write, the silver Isis medal.

3. To Mr. J. Reeves, 47, Upper Seymour-street, Somers-town, for his adjustable scaffold, the silver medal and five pounds.

4. To Mr. F. E. Franklin, Purton, Wiltshire, for his screw bench-hook for carpenters, the silver Isis medal.

5. To Mr. C. Arundel, 8, Great Mitchell-street, St. Luke's, for his improved fillister-frame, five pounds.

6. To Mr. Morgan Evans, 13, Wellington-street, Woolwich, for his universal drill-stock, the silver medal.

7. To Mr. J. Hick, for his expanding mandrel for turning lathes, the silver medal.

8. To Mr. R. McEwen, Glasgow, for his double mercurial steam-gauge, adopted to the purpose of a safety valve for steam-engine boilers, the gold Isis medal.

9. To Mr. V. de Stains, 221, Regent-street, for his twisted wire-spring for carriages, the silver Isis medal.

10. To Lieut. Hills, R. N., Coast-guard station, Lancing, for his machine for ascertaining the leeway of a ship, the silver medal.

11. To Mr. J. Speering, Duke-street, Bloomsbury, for his chair for an observatory, the silver medal and twenty pounds.

12. To Mr. G. Austin, 36, Grafton-street East, for his improved offset plotting scale, the silver medal.

13. To Mr. L. Thompson, Paradise-street, Lambeth-walk, for his new and improved method of assaying gold, twenty guineas.

14. To Dr. C. Callaghan, 4th Dragoon Guards, for his apparatus for suspending injured limbs, the silver medal.

15. To Mr. J. Paxton, Chatsworth, for his machine for cutting sash-bars, the silver medal.

16. To Mr. A. Smee, for his chemicomechanical galvanic battery, the gold Isis medal.

17. To Mr. Bruce, for discovering the indigenous tea-tracts, and successfully cultivating and preparing tea in the British possessions in India, the gold medal.

The thanks of the society were then given by his Royal Highness, in the name of the society, to several tradesmen, mechanics, and others, for improvements in their respective callings, after which the following were distributed :—

IN THE FINE ARTS—AMATEURS.—COPIES.

18. To Master Thos. Woodbridge, 7, Trinidad-place, Liverpool-road, Islington, for a copy of a horse's head, embossed in copper, the silver Isis medal.

19. To Master Grant, 71, Cheapside, for a copy in water-colors of a landscape, the silver Isis medal.

20. To Miss Ellen Elen, 43, Robert-street, Regent's Park, for a copy in pencil of sheep, the silver palette.

21. To Miss Sarah Barnard, Belvedere-road, Lambeth, for a copy in chalk of a head, the silver palette.

ORIGINALS.

22. To Mr. G. E. Sintzrich, 2, St. Paul's Church-yard, for a water color-drawing of horses, the silver medal.

23. To Miss Elizabeth Mole, Bury-road, Gosport, for five cameos, the silver medal.

ARTISTS.—COPY.

24. To Mr. Thomas Fuller, 11, Springfield-place, Bath, for a colored drawing of a Corinthian capital, the silver Isis medal.

ROYAL INSTITUTE OF ARCHITECTS.

June 1st. Mr. Kay, V. P., in the chair.

At the ordinary meeting of this society, several very valuable donations were announced, amongst which were some drawings of Inigo Jones's designs for the Whitehall Palace, supposed to be original. The council have been for some time engaged in forming a collection of all matters relating

to Jones and his works, and this present was therefore a most valuable boon. A long conversation was held on the means of constructing flues, so as to render the employment of climbing boys unnecessary, and a strong desire was shown on the part of the meeting to aid the efforts now being made by the society established for the purpose. Mr. Fowler took occasion to mention to the meeting that the *Société libre des Beaux Arts*, of Paris, had recently awarded to Mr. G. Godwin, jun., a silver medal, in testimony of their approbation of his published works, and commented upon the liberal feeling the society had thus evinced.

A communication from Mr. Parker, on the London bed of clay, was then read by the Secretary, relating principally to the formation of Artesian wells; after which Mr. Godwin read a paper on the art of glass-painting, and its present state in France and England. We fully agree with Mr. Godwin in opinion, that more encouragement should be afforded to its professors than is now the case, and sincerely hope that his remarks may have the effect of directing attention to an art which has such strong claims on the man of taste.

NUMISMATIC SOCIETY.

May 30th. Chas. Fred. Barnewell, Esq., F. R. S., F. S. A., in the Chair.

A communication was read from W. Steers, of Boston, America, containing an account of the currency of Massachusetts, and of the mintage of America; among the principal specimens mentioned by the author was copper halfpenny of Washington, supposed to have been struck at Birmingham, from whence North America seems to have been supplied previous to 1789; also the shilling, sixpence, and threepence for the Massachusetts, in 1787-88; and others struck in Paris. The communication was accompanied by the donation of the author's work on the Massachusetts currency, and specimens of American coins, chiefly brass.

A paper was then read by Mr. Samuel Birch, on a particular type of the coins of Phœnix, representing a young man seated on a tree, and holding in his hand upon his thigh a game-cock, with the inscription *FeΛχως* or *FeΛχανος*. Mr. Birch endeavored to identify the type with that of Apollon Helios, in opposition to the opinions of Echhel, Cadalvane, and other numismatic writers, who have referred it to Idomeneus, Iphis, or Leucippé. The paper, containing an analytical inquiry into all the attendant legends of Idomeneus and Iphis, compared also with the monument known connected with the appearance of the type of the game-cock, which was sacred to Mercury or Hermes, Demeter or Ceres, Pallas Athené or Minerva, and Helios or the Sun; and with the appearance of Ganymedes, said to be found with the bird of day, which, in the Cretan mythology, distinctly from the Attic always had reference to the sun. The type of this coin, which is androgynous, Mr. Birch refers to the Phœbos Apollon, identified with the sun or Helios, and proved that not only in its solar capacity, but even in its agonistic allusions, it is equally applicable to Apollo, who was most intimately connected with stadium. Mr. Birch also pointed out its relation to thermal sources, the same bird being found on the currency of Selinus and Himera, in relation to the hot baths and springs of these localities, which seems to be proved by the appearance of the head of the sun on the types of Etna.

Mr. J. Y. Akerman, the secretary, then addressed the meeting relating to the reading of the inscription in the word above, he considered a new power given to the Omicron, as in Koph of Kroton a harsher power was perhaps given to the latter. Mr. Akerman then stated, that although he had noticed this point to several English and foreign archeologists, he had not been able to obtain of them, as yet, any satisfactory solution of it.

Sir George Chetwynd, Bart., then arose and addressed the meeting, in presenting to the society the well-known copy of his magnificent collection of

tokens, drawn up by Mr. Sharp; Sir G. passed the highest encomium on Mr. Bolton and his labors, and stated the origin of token collecting in this country to be owing to the beautiful specimens issued by the mining companies, principally the Angles. He then continued to state several interesting facts relative to the currency; the enormous profit made by the minters, the manufacturers clearing nearly 50 per cent. on these articles, previous to the grand coinage, and the immense value of the representation on these coins; for example, that almost an entire suite of the public buildings were to be found upon them, and of many of these buildings, some of which had disappeared long ago, owing to the improvements going on, no print or other representation existed. A great number were also a species of political caricatures, and alluded to the history of the seventeenth century; while others were not less interesting for the representations of animals, objects of art, &c., which were impressed on them. Another class were satirical, and the token collectors had been pretty handsomely paid off; among them was one, the "coin collectors' token," and the type of an ass, with asses running for tokens! In conclusion, he begged to assure the meeting that his collection of these interesting local muniments, which amounted in his possession to 2,500 pieces, had been collected at an expense of not less than £1,000, and that he should feel the greatest pleasure in presenting to the society the duplicates of his collection, if the society intended forming a suite of these objects, as also of affording all the information in his power to any persons engaged in similar pursuits, and recommended to the especial notice and attention of its members to these hitherto considered unimportant documents. In conclusion, he recommended the society to hold their anniversary in May, and to dine together on that occasion.

Mr. Barnewell replied that he had the greatest pleasure in bearing testimony to the high value of Mr. Sharpe's catalogue of Sir G. Chetwynd's collection, which, in his official capacity (keeper of the medals in the British Museum), he consulted almost daily, and that Sir G.'s recommendation should be proposed to the council. He then proposed a vote of thanks to Sir G., and the society adjourned.

The reading of Mr. Nightingale's paper on the Roettiers (Dutch die-sinkers at the Mint) in the reign of Charles II. and his successor, was postponed.

BOTANICAL SOCIETY OF LONDON.

June 5th. D. C. Macreight, M. D., V. P., in the Chair.

The secretary announced a splendid donation of American plants from Dr. Gavin Watson, of Philadelphia, corresponding member of the society. Mr. Tatham, of Settle, Yorkshire, presented specimens of *Dryas Octopetala*, obtained from the hills in that neighborhood. Mr. H. M. Holman, of Reigate, Surrey, forwarded living specimens for distribution of the rarer plants of that locality, comprising *Aceras Anthrophorophora*, *Ophrys muscifera*, *Lathraea squamaria*, *Osmunda regalis*, &c., &c. A paper was read, communicated by the Curator, being part 3 of the *Monograph of Ferns*, by Mrs. Riley, of Papplewick, Notts. It comprised a description of the British species individually; the remarks being the result of many years' personal experience, having cultivated every British species side by side, and watched their specific differences with great care and attention. Mr. Thomas Sanson exhibited a prolific specimen of *Polytrichum commune*, in which a second stem was developed in the place of the stalk bearing the fructification, an anomaly not unfrequently met with among flowering plants, as for example in the *Rose*, where the central axis of the flower is occasionally prolonged into another stem, bearing all the essential characters of a true flower. A discussion ensued, in which Dr. Macreight, Dr. Willshire, and others took part.

URANIAN SOCIETY.

June 2d. Lieutenant Morrison, R. N., in the chair. W. H. White, Esq., Vice President, read a paper on "Clouds in connection with electricity."

The following communication was read by the secretary.

"On a Law which obtains in the Planetary Motions." Communicated by James Utting, Esq., of Lynn Regis, Norfolk.

The following analogy which obtains in the planetary motions, has, the author believes, never been published by any astronomical writer, and is consequently but little known, viz.—If the square of the mean orbicular motion of each planet in its orbit, be multiplied by its mean proportional distance from the sun, a constant product will be obtained equal to unity for all the planets, taking the earth's orbicular motion, and its mean distance from the sun, in each case equal to unity.

The same analogy obtains in each respective system of satellites; for if the square of the velocity of a satellite be multiplied by its proportional mean distance from its primary, a constant will be obtained for each respective system of satellites, and if this constant be multiplied by the square root of the sun's mass, the mass of each planet being unity, the same constant will be obtained also equal to unity, the same as in the first case, or that of the planets, as above stated.

Thus an invariable product, or constant, obtains in the planetary motions, extending to the whole planetary system, resulting from the periodic times and mean distances of the planets with the periodic times and mean distances of their satellites, compounded with the attractive power of the sun, as compared with that of the primary planets around which each respective system of satellites revolve.

The same constant is obtained by multiplying the mean orbicular motion of each planet or satellite by the square root of its mean distance from the sun, or from its primary.

It has been demonstrated by LAGRANGE, that amid the changes which arise from the mutual actions of the planets, there are two things which remain perpetually the same, namely, the major axis of the orbit which the planet describes, and its periodic time, so that the mean motion of a planet and its mean distance are invariable quantities. Hence, either of the above processes will give a constant which will for ever remain invariably the same, unless some foreign cause intervene to disturb their motions. The meeting then adjourned to the 7th July.

THE THEATRES.

"See that the players be well used."—*Hamlet*.
"Nothing extenuate, nor aught set down in malice."—*Othello*.

HER MAJESTY'S THEATRE.—On Monday last, the veteran DOWTON took his final leave of the stage, at this theatre; and we are rejoiced to say that his "benefit" was well worthy of being so called, for the house was densely crowded in every part. The comedy selected for the occasion, was *The Poor Gentleman*, and as it was particularly well cast,—perhaps better than it may ever be again, we record the names of the *dramatis personae*. FARREN personated *Corporal Foss*; WEBSTER, *Farmer Harrowby*; HARLEY, *Ollapod*; MEADOWS, *Stephen Harrowby*; COOPER, *Lieut. Worthington*; ELLEN TREE, *Emily*; MRS. GLOVER, *Lucretia Macabre*; MRS. HUMPHREY, *Mary*; and DOWTON himself, *Sir Robert Bramble*. The combined efforts of these artistes, caused the play to be well relished, and the *beneficiaire* was vociferously applauded throughout. His emotion was great, and he had barely sufficient nerve to support the anxieties of the evening. Immediately after the comedy, Mr. Sheridan KNOWLES came forward, and delivered the follow-

ing Address, composed by himself for the occasion:—

"On me devolves the prideful, painful part,
For one—an honor of his kind and art—
The final thanks—the last farewell—to speak
Because, with heart o'erfraught, his tongue is weak
Whose years, protracted past the span allow'd,
Deny the vigor, freely once bestow'd!
He bids me call this thronging visit kind,
Considerate, generous!—He joys to find
So many friends, in life's far winter, true.
I do his bidding—now I say, for you,
The richest tribute were his simple due.
An actor in our stage's palmiest day,
Our Dowton was. His was the envied praise
To shine while Suet, Palmer, Kemble shone,
And many a Thespian daughter, well as son—
As Farren, Jordan, Siddons—each a star
With its own lustre shedding light afar.
Who can forget, who knew the stage gone by,
How *Orzenebo* lower'd and *Rolla* nigh?
How *Hassan's* simple tale the heart impress'd
Deep as the dream of *Osmond's* harrow'd breast!
Here might *Melpomene* suspect a son,
So to the truth the tragic scene was done;
But arch *Thalia* claimed him for her own!

"His various triumphs why should I repeat,
From *Sheba*, upwards, to his master-feat,
Contwell—the type of that hypocrisy
Which damns the stage, and, question'd, knows not why?
His rich *Sir Oliver*—his *Sir Anthony*
Most absolute!—his *Major Sturgeon*?—We
Who saw these 'glories of his art,' in vain
Would paint their lustre, can they see it then,
To whom by our report it may be shown?
'Tis poor to say in these, and more, he stood alone!
True to his art, whene'er he tried his skill,
Nature—but Nature—was his model still.
Partial effects the genuine actor's soul
Disdain'd—he sought and clasp'd the perfect whole,
To trick, grimace, he never deign'd to stoop;
But still 'tis the mirror held to Nature up,
His author's spirit ever kept in view—
In text, conception, execution true!

"Now to the man!—Whate'er our grasp of art,
The head is still but second to the heart!
The actor, poet, painter, all may scan;
The intimate alone beholds the man!
The independence, interest, cannot bend—
The kindness, spring-like, gushing without end;
The modesty that loves not to oppress;
The manliness not shows, but deeds confess.
The silent, proud enduring—without pride
In the man since—the sweetness at its side;
That kept the heart bland as the manly face?
All these the private friend exults to trace.
In him a prouder muse than mine might praise,
Yet own the sterling theme beyond the lays.

"For him, who fifty years the buskin wore,
Now threescore years and ten, and some few more,
Once more the curtain rises: ere the fall
Of that which shuts out actor, stage and all,
To take farewell—thrilling, silent one!
Then feels the heart, when utterance is gone!
Best we be brief. I speak for him—for you
There is a taste of death in this adieu."

To the above succeeded, a musical entertainment, in which GRASI, and Mlle. Dorus GRAS took a part. The whole concluded with the lively farce of *Gretna Green*, in which Miss KELLY and WRENCH sustained their original characters.

DRURY LANE.—The *Concerts d'Eté* to which we directed attention in our last, commenced on Monday; on which occasion, the promenade was crowded in every part. The orchestra, consisting of 98 instrumental, and 36 vocal performers, exerted themselves with the happiest effect, several of the overtures, waltzes, &c. being loudly encored. MR. ELIASON has spared no exertions, and no expense, to secure the success of his enterprise; the theatre having been re-decorated, and materially altered, and the promenade carpeted throughout.

HAYMARKET.—MR. Charles KEAN is still the "lion" of this house, MACREADY playing only on the "off nights!" Alas, that we should live to record such an indignity! Certain interested parties have censured us, in no measured terms, for giving so "naked" an opinion of Mr. KEAN's abilities, or rather want of abilities, and say we act "unfairly." To clear ourselves, and to show that the charge against us is idle, we insert the remarks of another critic—also an honest one—which appeared in the *Morning Herald* of Tuesday. The theatrical writer of this paper, proves on all occasions that he acts from a conviction of truth. We should premise, that the criticism refers to Mr. C. KEAN's attempt to personate *Richard the Third*.—There is pre-

cisely the same distinction between the stage heroes of Mr. Charles KEAN and the creations of a great actor, as between very clever wax-work and consummate sculpture. Hence, the admirers among "the great, vulgar, and the small" of the representative of the *Richard* of last night; for, taking the mere mass of sight-seers, how many would give the palm to the labors of Madame Tussaud (they "are so like life") over the blank cold faces of Mercury and Apollo! There is precisely the same life-like stare—the same obtrusive naturalness in the characters of Mr. KEAN, as in the handiwork of the ingenious show-woman. Charles KEAN is, in a word, the wax-work likeness of his father. There is the same form;—as an actor, the same lineaments, the same "villanous hanging of the nether lip;" but, for the irradiation of intellect, for the play of passion, and the rare and exquisite power of expression in all its might and subtlety,—there is no jot of it to be found at the Haymarket, no more than in the hundred waxen effigies of the Queen's Bazaar.

Mr. Charles KEAN has achieved a certain degree of reputation among many goodnatured people, who are too prone to be

"Pleased with the foolish whistling of a name," and who, thinking genius a thing of inheritance, have been content to take the dull, waxy resemblance of a great actor, as the living representative of the actor himself. It is only in consequence of this, that we are induced to consider Mr. Charles KEAN with any gravity of criticism: we should otherwise treat his claims as a matter of jest; and only consider the imposing type that announces his experiments, as a part of the joke carried on by a waggish lessee. When, however, we feel assured that there is sober sadness in the pretensions of the actor—a dogged and unimitable earnestness in the complimentary clamor of a manager, we are, spite of ourselves, provoked into an examination of the vaunted merits of the "eighth wonder." We cannot day by day see bubbles blown, and hear every one of them vaunted as "one entire and perfect chrysolite:" no, we cannot refrain from showing that the bubble, however bright, is born of a puff, and that the finger of criticism can test the true gem, whilst instantaneously it breaks the evanescent thing of soap and water.

Mr. Charles KEAN is placed before us in the situation of a great actor. His pecuniary rewards "for twelve nights" are said to be those of the highest genius. Large type and a high salary, with many well-meaning people, make consummate talent: the artist is confounded with the sum he receives. Give a man £50 per night for balancing straws upon his nose, and there are many worthy folks who, from the fact, would instantly perceive a heretofore hidden merit in the balancing of straws—an extraordinary development of intellectual resources in that otherwise contemptible recreation. So it is, for a time, with the actor; no matter for the materials of the idol, so they be sufficiently plastered with gold leaf; an easy-going million will, for a certain time, throw their caps up at it. In this success, Mr. Charles KEAN has largely participated; he hath "eaten of the insane root" of public applause—an applause bestowed more upon his name, and arising more from the influence of old associations, than due to his own claims as an original delineator of the human passions.

We last night saw Mr. KEAN in *Richard the Third*. The exhibition has only confirmed us in our poor opinion of the actor; he is a mere triclerk, with certain hereditary defects, which, in their painful exaggeration, only too acutely remind us of the inimitable beauties that were wont to accompany them, and, by their transcendent power and delicacy, making us for the time forgetful of their existence. Mr. Charles KEAN wants every requisite for a great actor. He is not capable of concentrated passion, but scolds and raves; and for sardonic merriment—in which his *Richard* would fain take special delight—it is the vulgarest

jocoseness; the laugh and chuckle of mere farce. Throughout *Richard*, there was no moral presence: it was altogether of the poorest and coarsest kind of stage artifice.

The house was not well attended, and the applause—though, at times, cordial from the gallery—was, on the whole, cold and stinted."

Had the above proceeded from our own pen, we could not have expressed our opinion more vividly, or more forcibly. We coincide with the writer in every sentiment he has put forth; regarding Mr. Charles KEAN as true "Brummagem ware."

ASTLEY'S.—Another novelty was produced here on Monday, for the holiday folks, who flocked in by thousands, "piping-hot;" and who made little difficulty in disengaging themselves of at least half their clothing! The new *spectacle* is called the *Tower of London*, and is founded on the romance of that name, by Mr. Ainsworth. The historical events are carefully worked out, and the *ensemble* is a gorgeous piece of scenic effect. After this, we had the grand Scenes in the Circle, and Van Amburgh's Colossal Elephant, all which kept the audience in uninterrupted good-humor.

MUSIC IN PARIS.—PARIS, June 7.—This is the age of revolutions—even the Académie Royale cannot escape one. A change of dynasty has taken place. The last ruler, conjointly with Duponchel, was M. Edouard Monnais, a gentleman of *feuilleton* fame, of mild and unassuming manners. Imagine such a man of literary tastes and pursuits, of excessive amiability, thrown amongst the discordant elements of the largest musical establishment in the world. To occupy himself with the feuds of the *figurantes*, the caprices of singers, and the inordinate pretensions of all, from the candle-snuffer (if such a department now exist), to the first tenor or *prima donna*. Poor Edouard Monnais!—to quit your shades and groves for the opera *coulisses*—to wage war with convenient sore throats and stiff limbs—to conciliate the singer, and propitiate the *dansuse*. He broke down—he has abdicated, but has the good fortune to make a good retreat, and M. Edouard Monnais is now the King's Commissary of the Royal Theatres. One glorious act signalised his management—with his martyrdom he produced *The Martyrs*. His abdication produced a crisis. Who would dare essay to wield the sceptre? Not one person could be found hardy enough to undertake a divided task—a divided responsibility. As there can be but one captain of a ship, so can there be one but director of a theatre. "All or nothing," says M. Leon Pillet; "appoint me dictator, supreme chief, emperor, sovereign, despot, in fact, of the Académie, and I am your manager." Capitalists came forward to sustain M. Pillet's pretensions, and he is now the head and front of the undertaking. M. Duponchel remains content with the modest title of director, without a particle of authority. M. Fillet and M. Duponchel at the Académie, are the Louis Philippe and M. Thiers at the Tuileries, Louis Philippe reigns, but M. Thiers governs; M. Duponchel reigns, but M. Pillet governs. M. Leon Pillet installed—*coup de théâtre* was necessary. In a few days, the Académie must be closed for urgent repairs and embellishments. Duprez was compelled to go into the provinces, where he could obtain fresh air by disseminating his notes. You in London have torn from us Dorus Gras. The want of a second tenor to replace Duprez in case of illness, had long been felt. Mario kept to his *Count Ory* and *Robert le Diable*; he would not risk his reputation in *The Juive*, *The Huguenots*, *Guillaume Tell*, *Masaniello*, *Guido et Genevra*, &c. M. Leon Pillet looked around him—there was a tenor named Marie, who had acquired some notoriety by a law suit between the defunct Renaissance and the Opera Comique as to his engagement. The latter gained the day. Our readers may remember we recorded his *début* at the Opera Comique in a little opera by Clapisson, called *The Symphonie*, where Marie played the part of a composer, who goes mad for love, and is restored to reason by having his lost symphony played before

him. Now we were a great prophet on that occasion, we said Marie was cramped in his career at the Opera Comique. The area was too small for such a vocal gladiator—a tenor of a large expansive voice, requiring massive phrases and striking situations to come out; in short, we remarked the Académie is Marie's destiny or he is nothing—*aut Cesar aut nullus*. Well, here has Marie made his *début* at the Académie, and the musical critics are unanimous that for the great lyrical works he will be a most admirable double or second to Duprez—that if Marie is not an accomplished artist, he possesses at least all the intelligence and necessary attributes to constitute one, and that a gap long-wished-for has at length been filled up, namely, there is now a second tenor at the Académie. Marie chose *Eleazar* in Halevy's *Juive* for his opening part. He was enthusiastically received. His voice is of great compass, partaking of the barytone and the tenor. He has great energy, but requires much practice to give the delicate *nuances* with precision—the transition from his chest to the head voice is not well managed—his voice is, in fact, unequal in its registers. He must not be deceived by his triumph, he has much to learn; but there are glorious materials to work upon *en attendant*; he is an excellent substitute for Duprez, whose sublime fourth act (the scene *Rachel*) will, perhaps, never be approached in this epoch. Madame Rouille, pupil of the Conservatoire, known as Mademoiselle Peignat at the Opera Comique, also made her first appearance the same night as Marie, in the *Juive*. Her *Rachel* was a successful, but not a triumphant performance. She has a fine voice, but wants style and refinement.

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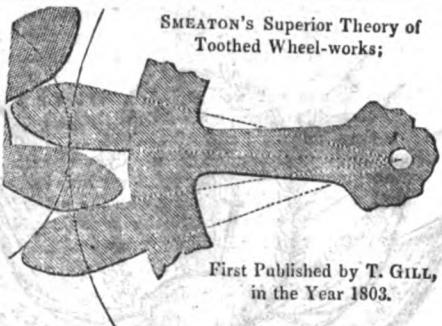
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No. 46.]

SATURDAY, JUNE 20, 1840.

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CULTIVATION OF TEA IN INDIA AND JAVA.

Upon the return of the Earl of Auckland from the provinces to Calcutta, a deputation of the Directors of the Bengal branch of the Assam Tea Company waited on his lordship, stating the position of the Company in Assam. His lordship appeared to be fully conversant with the difficulties with which the enterprise was beset, and allowed that its importance deserved every encouragement at the hands of Government, and he dismissed the deputation with the assurance that he would not lose a day, in laying before his council a resolution that should give to the company all the assistance it required, compatible with the present position of the province lately ceded to Upper Assam, and with the determination of Government to retain their experimental factory at Jaipore, as a school for apprentices, open to all parties who may hereafter desire to prosecute the same objects, and as a nursery for the propagation of the best tea plants to be collected, but on so limited a scale as to offer no obstacle whatever in the way of competition; but, on the contrary, much advantage from the increased number of native artisans who will be available hereafter from this school.

Shortly after this interview, orders were issued by Government to the following effect:

1. That the Assam Company be allowed to form such a settlement, north of the Boree Dehing river, as may be sufficient only for the residence of their workmen and laborers, and, if necessary, for the growth of grain for their support; that this settlement be either at the spot at the confluence of the Tingri with the Boree Dehing, or at some other point which may be found convenient.

2. That the agents of the Company be allowed to collect and purchase tea-leaves in the Mattock country, either to the north or south of the Tingri river.

3. That it be at once settled, that the Company is eventually to have the option, before other parties, of receiving within a certain circuit of their place of first settlement (say of five, eight, or ten miles), a tract of land in the Mattock country, when the

political condition of that territory may admit of it, within defined limits, and suited to the extent of their capital and means.

4. That two-thirds of the Government present establishment for the cultivation of tea, be made over, the local authorities being directed so to modify this general rule as they may find to be requisite for ensuring to the Government use a complete experimental establishment. One-half of the portion of the establishment to be transferred to the Company will be reclaimable by the Government at any time within five years, on a three months' previous notice, and for a larger term, say ten years, all processes of cultivation and manufacture within the Company's limits shall be fully open to the examination of any parties deputed by the Government. The transfer of the manufacturers and workmen brought from China to be made with their assent, upon the understanding that the Company will adopt every beneficial contract made with these persons; and upon their assenting to the change, will reimburse the Government for the expense incurred in procuring and transporting them to Assam.

5. The services of Mr. Bruce, the Government superintendent in Assam, to be transferred to the Company.

6. The poppy not to be cultivated by the Company.

At a general meeting of the Company, held at Calcutta on the 7th March, before these orders had been issued, a report of the Directors was read upon the proceedings of the Company, since its establishment on the 1st of June, 1839.

The Directors therein state, that progress had been made during the past six months in creating establishments in Upper Assam, and preparing means and locations for the future manufacture of tea especially, but without limiting their views to that article of produce alone.

The first location of the Company was formed by Mr. J. W. Masters, the superintendent, in November. This station is well situated upon the Dikho River, opposite to the old fort of Gurgaon, not liable to inundation, comprising about 213 acres, and in the immediate neighborhood of a considerable population; the great Dhodur Allee, or high road going from Jorhar to Sadya, passing contiguously on the western side of the grant. The next position taken up, was at the mouth of the river Dikho. The next object of Mr. Masters was to penetrate the jungles surrounding Nazira, in search of tea plants, the report of Mr. Bruce having placed thirteen bares in its immediate neighborhood.

In this search he came upon a small place, covered only with grass jungle, in which was an excellent tank of sweet water, about 400 by 500 feet square, in as good

order as if only recently dug. The place is called Ligri Pokuri, and the distance from Nazira being only four miles, it was thought to offer advantages for another excellent position; an assistant had accordingly been placed there with coolies, to prepare buildings, and commence clearance of jungles in the direction of the tea bares, and already Mr. Masters has reported having come upon six different patches of tea jungle, and though rather small in extent, the fact of one of these tea trees being upwards of 30 feet high, establishes the fitness of the soil for the cultivation. Nazira will thus form the Sudder station of the gardens, which will be established without delay in every position where the soil will admit of it, from Gabroo Parbut up to Chero, on the north side of the Dikho. It is proposed to establish an extensive bazaar at Gurgaon, where the whole fort will probably be made available to us, and it is expected that the natives from all the neighboring districts will soon congregate, when grain, salt, and manufactures will be placed there in abundance. By a system of barter for tea leaves, and other natural productions of the country, it is hoped to establish a valuable auxiliary to the Nazira station. Instructions have been given to Mr. Masters to place people both on the Dikho and on the Boree Dehing rivers, in search of coal, with coolies to collect it wherever found, so as to form depots in different places by the time it will be required by the Company's steamer. There is little doubt of its abounding in many parts of Upper Assam, but whether its position or quality is favorable or not for the purposes of the Company, remains to be ascertained. In addition to the above locations, orders have been given for preparing immediately houses and golahs at Jaipore, and on the Tingri Nullah, that the Chinese laborers already sent up, and on their way to Assam, may, as soon as possible, be made available for the increasing of the tea bares in the Mattock country, and for the manufacture of the leaves now to be found there, or to be collected from the neighboring districts; and it is expected that some of the native chiefs will enter into contracts to deliver the produce of their provinces for the consideration of a monthly salary to themselves, and the value of the tea, delivered by weight. At the mouth of the Dibooroo River, Capt. Vetch has lately formed a new station.

The number of artificers, laborers, and settlers, sent to Assam by the Company, is nearly 2,000, exclusive of Chinese laborers from Penang and Singapore, amounting to about 500. The Directors have also obtained, through the political agent at Muneepore, permission from the Burmese authorities to send a Chinese messenger straight across their country to Bamoo Mecoo, which is a large mart in direct communication with the frontier

own of the province of Yunan. This messenger, who speaks Burmese and Portuguese as well as Chinese, has instructions to endeavor to establish a regular communication, if possible, so that Chinese artisans may find their way across with facility, from Yunan, through the Burmese territory, into Muneepore, and thence they can easily be passed into Assam.

"With regard to the extent that the cultivation of tea can be carried to," the Directors say, "we have been informed by the authorities of Upper Assam, that they considered the capital necessary for this purpose to be 300 per acre, consequently, that our Company might be allowed grants to the extent of 30,000 acres, as the equivalent of our capital; and it is stated at the same time, that there is room for at least six such companies as our own."

While we thus direct attention to the energetic impulse given to the cultivation of the tea-plant in India, we must also point out a source whence an immediate supply of tea could be obtained; and that is from Java.

The *Journal of Netherlands' India* contains an account of the tea cultivation in Leak, in that island, by Dr. Buddingh, a resident. From it, we extract the following particulars:—

"The tea is exclusively grown in the hilly country, where a moderate temperature of 65 deg. to 75 deg. (Fahr.) is found. The cultivation in the district of Leak already consists of 1,200,000 plants, of which 183,000 are in a fit state for gathering. By the close of this year, the number will be increased to 700,000 plants more, whilst in the year 1840 twelve tea manufactories will be at work. The tea plants are placed in gardens four feet square apart, having been previously grown from seed in separate beds. After the plant is full two years old, it may be reckoned ready for plucking. About this time, in every garden of 70,000, 90,000, or 100,000 plants, separate manufactories are erected for the preparation of black and green tea. In every garden and manufactory, from twenty-five to thirty native families are placed, at moderate wages. Their occupations consist in keeping the gardens, gathering the leaves, and preparing the tea, also in making garden implements; and other articles required for the working and packing of the tea, are made by the members of these families. The tea harvest takes place once every year, during the rainy season, and generally lasts six months. Before the harvest, the plants are lopped, being then one and a half to two feet, in order that they may produce many and tender leaves."

The doctor then proceeds to give a most interesting account of the process of manufacturing the Java teas, and thus concludes:—"The tea is conveyed to Batavia in bamboo baskets (*kraand junks*), the interior lined with bamboo leaves, to prevent the access of air. Regarding the quantity each tea-plant produces, sufficient experience has not been had to form an exact calculation; but it may be supposed that a successful tea plantation of 100,000 plants can produce 5,000 to 6,000 pounds of dry tea, and consequently the leaves of sixteen to twenty plants are required for the produce of one pound of dry tea. The district of Leak alone will produce, within a few years, more than 150,000 pounds of tea."

ON THE APPLICABILITY OF PEAT TO MANUFACTURING IRON.

Can Peat be advantageously used in the manufacture of iron? If we consult the authors who have written on this subject, the answer will be in the negative; but if, on the contrary, we consider with attention the nature of this combustible, it is to be hoped that it may yet be rendered of the greatest use. Experience proves that in such a matter we ought not to pronounce an absolute opinion. We ought, on the contrary, to recollect that the simplest processes, and those now most practiced, did not succeed until after encounter-

ing a thousand difficulties, which were successively overcome. The history of the manufacture of iron with coal, is the most striking instance of this truth. The English forge-masters maintained with all the energy of conviction, that pit-coal could never be used in the fabrication of iron, and treated with ridicule those who made such attempts. These oppositions are easily to be understood; those who are guided by routine, ignorance, and folly, with their usual accompaniments, constitute an immense majority, and are able to crush the most happy conceptions in the bud; hence arises all the obstacles which have retarded and will continue to retard the development of industry.

Peat is to be found in abundance in all our provinces; and may be easily procured. Dry peat contains from twenty-five to seventy-five per cent, of vaporisable substances; when carbonised, it retains from 4 to 44 parts in thousand of cinder; thus, we perceive, the quality of this combustible is still more variable than that of coal. According to Muschet, 1000 parts of peat, when analysed, yielded 726 of vaporisable matters, 252 of carbon, and 22 of cinder. The same peat analysed by Marcher, afforded, in one instance, 220 vaporisable parts, 650 of carbon, and 130 of cinder; in another analysis it afforded 480 of vaporisable substances, 370 of carbon, and 150 of cinder. These analyses show how large a quantity of combustible matter peat contains.

It has been observed by Pelouse, that "peat absorbs water with great avidity, and attracts it rapidly from the atmosphere. The carbon is in a state adapted to act powerfully on this liquid and to decompose it: thus we see that peat takes fire spontaneously, after having been exposed to rain. It was easy to foresee that dry peat, which may still retain three quarters of its weight of vaporisable matter, would be incapable of producing a sufficient degree of heat to melt iron ores, whatever was the quantity of it put into the furnace, for as the evaporation would waste a great quantity of the heat, the middle of the furnace would be sensibly cooled. But it might be expected that peat, when deprived of the greatest part of the vaporisable substances contained in the dry combustible, could be successfully used. Nevertheless, on observing the nature of this fuel, and considering its excessive combustibility, it was not less easy to perceive that great difficulty would be experienced, not to say impossibility, in employing it for the fusion of metals."

From the preceding remarks, it appears that it would be impossible to use fresh cut peat, but after it was well carbonised, it might be employed, if not in blast furnaces, at least in puddling furnaces, and forges. What particularly distinguishes peat coal, is its porosity, and consequently its lightness and excessive combustibility. Thus, as the heaviest coal is the best adapted for blast furnaces, because it gives out more heat in a given space; so does it necessarily follow that peat, which is the lightest of all coals, must be the least fitted for the reduction of ores in blast furnaces. It must not be inferred from this circumstance, that peat coal is unfit for melting iron, but merely that it cannot be advantageously employed with our present apparatus, which we expect will shortly undergo some important modifications.

But, in the mean time, peat, because it is excessively combustible, if not employed at present in blast furnaces, might be at least tried in puddling and reverberatory furnaces; and it is this trial that we recommend, because it may be made without expense, and without fear of any accident.—*L'Ancre.*

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING JUNE 13, 1840.

ENGLAND.

Not a single patent has expired during this week.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS
ENTERED AT THE ENROLLMENT OFFICE, UP TO
THE WEEK ENDING JUNE 13, 1840.
(Continued from No. 45.)

ENGLAND.

JAMES WILNOT NEWBERRY, Hook Norton, Oxford, farmer, and GEORGE SAUNER, of the same place, clerk, *improvements in machinery for dibbing or setting wheat, or other grain, or seed*, June 2.—This improvement consists in placing a number of hollow dibbles to radiate from a centre, so that when the horse draws the carriage of the machine, the seed is made to drop into a channel, conducting to the hollow dibbles, which are fixed on a nave and axle, forming thereby a wheel with projecting dibbles, that rotate on the surface of the ground.

A grooved disc, that rotates by the means of suitable gear, causes the dibbles to rise and fall, while a small rack causes them to have a twisting motion, similar to that which is given by the hand of a gardener when planting seed.

JOHN LESLIE, Conduit-street, Regent-street, tailor to Her Majesty, *improvements in measuring the human figure*, June 9.—Steel springs or bands, connected by suitable fastenings, are employed for measuring the human frame. There are concave plates for the knees and elbows, as well as for fitting under the arm-pits. The bands are made of very thin steel, and along them are arranged a number of holes.

The main spring bands are fastened by rivets to the concave plates, and other spring bands branch from these to the different parts of the human figure, so that the whole is put on too loose, and is afterwards adjusted to the figure by means of sliding sockets and screw fastenings. There are other fastenings, which being turned opposite to an opening slot, will allow the bands to be taken off with their correct measurement.

SAMUEL WHITE WHITE, of Charlton Marshal, Dorset, *improvements in preventing persons from being drowned*, June 9.—This improvement, denominated "an aquatic life hat," simply consists in forming an air-tight, or waterproof chamber, within that space of the hat leading from the crown of the head to the top of the hat. The inventor considers, that in travelling, persons ought to attach, by means of a cord, the hat to the collar of the coat, thereby the hat being buoyant, would be the means of preventing a person from being drowned. Another method is to put into the hat a waterproof lining, that would be sufficiently full to admit of its being drawn close together.

PIERRE FREDERICK GOUY, Tavistock-street, Westminster, watchmaker, *an improvement in clocks, watches, and other time-keepers*, June 9.—This improvement is for marking the second time, while taking an observation at sea or on land.

On the axle of the second hand, revolves a cross rest, at the ends of which are holes for the reception of a circular hair spring; a hollow drum, with cannon socket, fits on the centre of this cross rest, which has a vertical pin to steady the supplementary second hand, immediately on a line with the ordinary hand.

Two arms, acting as a detent, pass on each side of the drum, for the purpose of holding it when required; thus, by the aid of a spring catch, these arms are made to hold the drum, or release it. When the drum is held, the supplementary second hand stops during 58 seconds, while the ordinary second hand continues its revolving motion, whereby the person taking an observation has an opportunity of marking the exact time without the necessity of stopping the watch, as heretofore.

HAROLD POTTER, Manchester, Lancaster, *improvements in printing calicoes, muslins, and other fabrics*, June 9.—The claim is for taking two or more colors from the same surface sieve. A color-box has partitions in it, forming compartments to receive

different colors; these partitions fit close into the grooves of the roller that revolves in the colors, and an endless surface sieve moves on the periphery of this roller, and conveys the coloring, which is smoothed by the doctor, to the engraved or printing roller. In what manner the different colors are put on to the one printing roller, we cannot correctly understand.

The second claim is for conveying the coloring, in like manner, to metallic rollers, engraved or figured, for the purpose of printing paper-hangings.

THOMAS RICHARDSON, of the town and county of the town of Newcastle-upon-Tyne, chemist, an invention of a preparation of sulphate of lead, applicable to some of the purposes for which carbonate of lead is now applied, June 9.—Into a suitable receiver, that has therein revolving paddles worked by machinery, is placed protoxide of lead, with strong acetic acid of specific gravity, 1.046; a sufficient quantity of water is added to render the whole moist. After the mass has been effected by agitation, a portion of it will be converted into an acetate of lead. Sulphuric acid of specific gravity, 1.5975, should be admitted, by means of a pipe, to the receiver, at the rate of 1 lb. per minute, until the protoxide of lead is converted into sulphate of lead, thus making 20 parts sulphuric acid, to 112 protoxide of lead. The mixture must be washed in a trough free from all foreign substances, which, after being ground and dried in the ordinary manner of manufacturing white lead, will possess a body applicable to some of the purposes for which carbonate of lead is now applied.

JOHN JUCKES, Shropshire, improvements in furnaces, or fire-places, for the better consuming of fuel, June 9.—This improvement consists in forming a vacant space below the burning fuel, in order to form a draught between the supply of coal to the furnace or fire-place.

There is a platform below the bars of the grate, and a hopper is placed in front to receive the coal, which must be pressed, when required, into the vacant space, by means of a piston or ram. The drawings are not sufficiently distinct, to prove whether the coal is pressed through the heated bars, or through an opening space, made for the purpose of admitting the quantity of fuel as it is pushed forward.

ENTERED AT THE BOLLS CHAPEL OFFICE, UP TO
THE WEEK ENDING JUNE 18, 1849.

(Continued from page 372.)

ENGLAND.

MILES BERRY, Chancery-lane, certain improvements in machinery or apparatus for making or manufacturing pins and sticking them in paper, June 2.—The specification of these improvements, although admirably arranged, would be difficult to explain without the aid of drawings, therefore it will be only possible to give the nature of the claims.

First, is the general arrangement and construction of the machines for performing the operations of feeding or drawing in the continuous length of wire; cutting off the required portion from the same to form the pin, which operation may only be partially done in this first machine, and afterwards finished by another upsetting or compressing process after annealing, and then completed by the moving file wheels or tools in a subsequent machine, or the head may be completely upset in the first machine, that is, a sufficient portion of the wire may be compressed in the dies at one operation, so as to gain sufficient bulk to form a perfect head, which afterwards has to be finished by removing the burs or rough parts therefrom, in the pointing or finishing machine.

The inventor particularly claims the method of causing the two headed dies to act in conjunction with one heading punch; they moving transversely across the machine, after cutting off the length of wire and carrying it alternately and successively opposite the punch to be headed.

Third claim is the general construction and

arrangement of the annealing machine, particularly the method of feeding in the partially-headed pins by means of the hopper; rotary drums, and spring sliders with the curved grooved guides, and carrying the pin shafts through the flame for heating the heads, and the oil or water for keeping the shafts cool by means of the endless ladder chain, and placing them in other grooved guides, from whence they pass to a second heading machine, acting with dies, as in the former machine. This part of the improvement, is similar to the second claim in Mr. Newton's specification for making screws (see page 322).

Fourth claim is the general construction of the machine for finishing, heading, and pointing the pins; particularly the application and use of the feeding apparatus, that is the hopper, with its drums, spring lifters, agitators, and grooved channels; also the large carrier wheel for conveying the pin shafts through the machine, and the modes of pressing the shafts against the wheel; also the rotatory and moving file wheels for removing the bur or feather edge on the heads of the pin shafts, as well as the file wheels for pointing the pins.

Fifth claim is the construction of the striking machine, with the hopper drums, &c. as aforesaid, which deliver the pins to the carrier plate, which is furnished with suitable recesses to receive the pins from the ends of the grooved channels, and carry them over the length of paper in which they are to be stuck. The crimping jaws act in conjunction, for the twofold purpose of crimping the paper and carrying it up, and forcing it upon the pins, and causing them to be stuck in the paper, while they are held in the carrier plate; together with the drawing off rollers, by which the paper and pins are delivered from the machine.

ROBERT HERVEY, Manchester, Lancaster, certain improvements in the mode of preparing and purifying alum, alumina, aluminous mordants, and other aluminous combinations and solutions, and the application of such improvements to the purposes of manufacture, June 10.—Potter's clay is first dried and ground fine, to which is added sulphuric acid and a sufficient quantity of water to reduce it to a soft paste; this is allowed to settle, and the supernatant liquor poured off; the sediment is again lixiviated with water and allowed to settle; the two liquors are put into one receiver, where prussiate of soda or lime is added, for the purpose of extracting the iron from the sulphate of alumina.

To bring this liquor to what is called in commerce, alum, add an equal quantity of potash or sulphate of potash, and after boiling them together, pour the liquor into leaden vessels to crystallise; the supernatant liquor should be poured off, and water must be added to the alum salt, after which it is left for 14 days in "rocking casks," when it becomes solid and fit for commerce.

To convert the sulphate of alumina into aluminous mordant, known in commerce by the name of "red liquor," add acetate of lime or lead to carry down the sulphuric acid, which leaves the liquor as acetate of alumina; this is redissolved in acetic or pyrolygneous acid, which converts it into an aluminous mordant or red liquor.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specification will be published in the "INVENTOR'S ADVOCATE," of July 25. Each party will receive, in addition, a private communication to the same effect.

Christopher Edward Dampier, of Ware, attorney at law, due July 14.

Hezekiah Marshall, city of Canterbury, architect, due July 14.

Arthur Eldred Walker, Melton-street, Euston-square, engineer, due July 16.

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED FROM JANUARY 1ST TO JUNE 30TH, 1830.

(For the Year 1831 see Page 356.)

Baking or Cooking apparatus, June 29, Hicks, R. Beer,—see Preserving, A. W.

Boats, making and fitting up, April 24, Cook, T.

Bobbin-net lace, June 8, Levers, J.

Boilers for steam, April 24, Cochoux, J.

Bolts and chains, April 24, Brown, S.

Bricks, May 8, Devenoge, H. R.

Bricks,—see Tiles, W. S.

Bricks, tiles, quarries, March 6, Stevenson, R.

Candles, Feb. 4, Miller, C. T.

Candle-making, Jan. 26, Bulkeley, T.

Canvas and sail-cloth, March 20, Orr, M.

Chains,—see Bolts, B. S.

Chemical agents,—see Mechanical power, P. S.

Cock or tap, May 4, Walker, J.

Cocks or taps, Jan. 26, Stocker, G. and A.

Cocks of taps, Feb. 27, Martineau, R.

Coloring extracted from woods for dyeing, Feb. 12, Buisson, J. M. de.

Cooking apparatus, March 20, Cochrane, W. E.

Cooking apparatus,—see Baking, H. R.

Copper, lead, &c., separated from earthy matters, April 29, Peterick, T.

Copper sheathing put on to ships, Feb. 4, Gray, J.

Corks and bungs, June 3, Bass, J. H.

Distilling and rectifying, Jan. 26, Busk, R.

Distilling and rectifying, March 31, Shears, D.

Drag for carriages, Jan. 26, Johnson, G. F.

Earth cut or excavated, June 8, Palmer, G. V.

Economising fuel, April 24, Descrozilles, P.

Excavating,—see Earth, P. G. V.

Fiddling or unfiddling masts, and masting and rigging vessels, Feb. 27, Garde, P. C. de.

Finishing goods made from wool, silk, &c., Feb. 12, Smith, J. F.

Fire-arms and other weapons, Feb. 27, Berenger, C. R. Baron de.

Furnaces,—see Steam-boilers, B. J.

Gas-making, April 5, Pinkus, H.

Gas-making, Feb. 12, Cowper, E.

Globe-making, Feb. 4, Pocock, G.

Guards for horses' legs and feet, March 20, Rotch, B.

Horses' legs,—see Guards for, R. B.

Hydraulic engine for raising water, Jan. 21, Dayne, E. and J.

Iron, making, from the smelting to rod or bars, Feb. 4, Lambert, J.

Lamp, June 29, Parker, S.

Latch for doors, Jan. 26, Arnold, J.

Locks, Jan. 18, Young, J.

Looms for weaving wire, &c., Feb. 6, Williams, T. R.

Masting and rigging vessels,—see Fiddling, G. P. C. de.

Mechanical power, June 19, Fuller, T. J.

Mechanical power from chemical agents, June 29, Parker, S.

Metal for sheathing ships, Jan. 28, Revere, J.

Metallic surface to cotton, &c., Jan. 26, Yates, J.

Molasses from sugar, June 29, Poole, M.

Paddy or rice, cleansing, Feb. 6, Wilson, M.

Paper-making, April 28, Wilks, J.

Pens, April 24, Perry, J.

Pepper, preparing, March 20, Fulton, J. A.

Pianofortes, Feb. 27, Thompson, S.

Preserving beer, ale, &c., March 30, Aitkin, W.

Printing calicoes, &c., May 24, Bush, M.

Propelling carriages, Feb. 27, Grisenthwaite, W.

Propelling vessels,—see Raising Water, H. W.

Pump, Jan. 23, Vaughan, G.

Pumps,—see Rotary motion, P. W.

Raising water for propelling vessels, Jan. 12, Hale, W.

Raising water,—see Hydraulic engine, D. E.

Rice,—see Paddy, W. M.

Rigging,—see Masting, G. P. C. de.

Rods, bars,—see Iron, L. J.

Rotary motion to pump, mangles, &c., Jan. 18, Parr, W.

Roving, spinning, &c. cotton, flax, wool, Feb. 27.
 Dyer, J. C.
 Rudders, Feb. 27, Sievier, R. W.
 Sail-cloth,—see *Canvas*, O. M.
 Salt-making, Feb. 27, Ericson, J.
 Sheathing,—see Copper, G. J.
 Sheathing,—see Metal for, R. J.
 Skates, Jan. 26, Cobbing, J.
 Smelting,—see Iron, L. J.
 Spinning,—see Roving, D. J. C.
 Springs to carriages, Feb. 27, Poole, M.
 Steam-boilers and furnaces, March 30, Boase, J.
 Steam-boilers, April 13, Ogle, N.
 Steam-engines, Feb. 27, Grisenthwaite, W.
 Steam-engine, June 11, Haycraft, W. T.
 Sugar, granulating, March 6, Guppy, T. R.
 Sugar, refining, June 29, Shande, W.
 Tapioca, British, April 24, M'Innes, J.
 Tiles, bricks, quarries, Jan. 26, Weight, S.
 Weapons,—see Fire-arms, B. C. Baron de.
 Wheels for carriages, Feb. 27, Howard, W.
 Windlasses, March 20, Scott, G.
 Window-sashes, March 6, Prosser, T.
 Wool or silk goods,—see Finishing, S. J. F.
 Woollen cloth, Feb. 27, Hirst, H.
 Woollen cloths, Feb. 6, Daniel, J. C.

BRITISH PATENTEES.

AN ALPHABETICAL LIST OF INDIVIDUALS WHO HAVE TAKEN OUT PATENTS IN ENGLAND, FROM JAN. 1ST TO JUNE 30TH, 1830.

(For the Year 1831, see Page 357).
 Aitkin, William, Preserving beer, ale, &c., Mar. 30.
 Arnold, John, Latch for doors, Jan. 26.
 Bass, John H., Corks and bungs, June 3.
 Berenger, Charles R. Baron de, Fire-arms and other weapons, Feb. 27.
 Boase, John, Steam-boilers and furnaces, Mar. 30.
 Braithwaite, John,—see Ericsson, John.
 Brown, Samuel, Bolts and chains, April 24.
 Brunton, Thomas,—see Fuller, Thomas J.
 Buisson, Joseph Marie de, Coloring extracted from woods for dyeing, Feb. 12.
 Bulkeley, Thomas, Candle-making, Jan. 26.
 Bush, Matthew, Printing calicoes, &c., May 24.
 Busk, Robert, Distilling and rectifying, Jan. 26.
 Carpenter, James,—see Young, John.
 Cobbing, James, Skates, Jan. 26.
 Cochaux, Joseph, Boilers for steam, April 24.
 Cochrane, William E., Cooking apparatus, March 20.
 Collier, James,—see Pinkus, Henry.
 Cook, Thomas, Boats, making and fitting up, April 24.
 Cowper, Edward, Gas-making, Feb. 12.
 Dakeyne, Edward and James, Hydraulic engine for raising water, Jan. 21.
 Daniel, Joseph C., Woollen-cloths, Feb. 6.
 Descrozilles, Paul, Economising fuel, April 24.
 Devenoge, Henry R., Bricks, May 8.
 Dyer, Joseph C., Roving, spinning, &c. cotton, flax, wool, Feb. 27.
 Ericson, John, Salt-making, Feb. 27.
 Fuller, Thomas J., Mechanical power, June 19.
 Fulton, John A., Pepper, preparing, March 20.
 Garde, Philip C. de, Fiddling or unfiddling masts, and masting and rigging vessels, Feb. 27.
 Gray, John, Copper sheathing put on to ships, Feb. 4.
 Grisenthwaite, William, Propelling carriages, Feb. 27.
 Grisenthwaite, William, Steam-engines, Feb. 27.
 Guppy, Thomas R., Sugar, granulating, March 6.
 Hale, William, Raising water for propelling vessels, Jan. 12.
 Haycraft, William T., Steam-engines, June 11.
 Hicks, Robert, Baking or cooking apparatus, June 29.
 Hirst, Henry, Woollen cloth, Feb. 27.
 Howard, William, Wheels for carriages, Feb. 27.
 Johnson, George F., Drags for carriages, Jan. 26.

Lambert, Josias, Iron, making, from the smelting to rod or bars, Feb. 4.
 Levers, John, Bobbin-net lace, June 8.
 M'Innes, John, Tapioca, British, April 24.
 Martineau, Robert, Cocks or taps, Feb. 27.
 Miller, Charles T., Candles, Feb. 4.
 Ogle, Nathaniel, Steam-boilers, April 13.
 Orr, Matthew, Canvas and sail-cloth, March 20.
 Palmer, George V., Earth cut or excavated, June 8.
 Parker, Samuel, Lamp, June 29.
 Parker, Samuel, Mechanical power from chemical agents, June 29.
 Parr, William, Rotary motion to pumps, mangles, &c., Jan. 18.
 Perry, James, Pens, April 24.
 Petherick, Thomas, Copper, lead, &c., separated from earthy matters, April 28.
 Pinkus, Henry, Gas-making, April 5.
 Pocock, George, Globe-making, Feb. 4.
 Poole, Moses, Molasses from sugar, June 29.
 Poole, Moses, Springs to carriages, Feb. 27.
 Prosser, Thomas, Window-sashes, March 6.
 Ramsay, James and Andrew,—see Orr, Matthew.
 Rawe, John,—see Boase, John.
 Revere, John, Metal for sheathing ships, Jan. 28.
 Rotch, Benjamin, Guards for horses' legs and feet, March 20.
 Rudder, Enoch W.—see Martineau, Robert.
 Scott, George, Windlasses, March 20.
 Shand, William, sugar refining, June 29.
 Shears, Daniel T., Distilling and rectifying, March 31.
 Sievier, Robert W., Rudders, Feb. 27.
 Smith, John F., Finishing goods made from wool, silk, &c., Feb. 12.
 Stevenson, Ralph, Bricks, tiles, quarries, March 6.
 Stocker, George and Alexander, Cocks or taps, Jan. 26.
 Summers, William A.—see Ogle, Nathaniel.
 Thompson, Simon, Pianofortes, Feb. 37.
 Turner, Edward,—see Shand, William.
 Vaughan, George, Pump, Jan. 23.
 Walker, John, Cock or tap, May 4.
 Weight, Samuel, Tiles, bricks, quarries, Jan. 26.
 Wilks, John, Paper-making, April 28.
 Williams, Thomas R., Looms for weaving wire, &c., Feb. 6.
 Wilson, Melville, Paddy or rice, cleansing, Feb. 6.
 Yates, John, Metallic surface to cotton, &c., Jan. 26.
 Young, John, Locks, Jan. 18.

NEW ZEALAND.

Intelligence of interest relating to New Zealand, has been received from Sydney. Governor Gipps had issued three proclamations. The first recited that "By letters patent, dated 5th October, 1837, her Majesty appointed Sir George Gipps Captain-General and Governor-in-Chief in and over the territory called New South Wales; and that by other letters patent, dated June 16th, 1839, her Majesty was pleased to alter and enlarge the limits of the said territory, so as to include 'any territory which is or may be acquired in sovereignty by her, said Majesty, her heirs or successors, within that group of islands in the Pacific Ocean, commonly called New Zealand, lying between the latitude of 34 degrees 30 minutes, and 47 degrees 10 minutes South, and 166 degrees 5 minutes and 179 degrees East longitude, from the meridian of Greenwich, and of all ports and garrisons erected or established, or which shall be erected or established, within the said territories.'" The second proclamation, after reciting the enlargement of Governor Gipps's commission, as in the former one, appointed Captain Hobson Lieutenant-Governor of the territory so described.

The third proclamation announced to her Majesty's subjects in New Zealand, that "her Majesty will not acknowledge as valid any title to land which either has been or shall be hereafter acquired in that country, which is not either derived from or confirmed by a grant to be made in her Majesty's name and on her behalf, but that care shall be taken

at the same time to dispel any apprehension that it is intended to dispossess the owners of any land acquired on equitable conditions, and not in extent, or otherwise, prejudicial to the present or prospective interests of the community, to be investigated and reported on by commissioners to be appointed by me, with such powers as may be conferred upon them by an Act of the Governor and Council of New South Wales;" and that "all purchases of land in any part of New Zealand, which may be made by any of her Majesty's subjects from any of the native chiefs or tribes of these islands, after the date hereof, will be considered as absolutely null and void, and neither confirmed nor in any way recognised by her Majesty."

Two New Zealand chiefs, John Touwack and Jackey White, and three other subordinate chiefs, had arrived at Sydney, and had an interview with Governor Gipps. They wished to ascertain whether it was intended to dispossess the parties to whom the chiefs had sold land, and whose title they recognised. The Governor was puzzled what reply to make, and said nothing distinct, except that the British Government recognised the independence of the chiefs of the Northern part of the Northern Island, but that this recognition did not extend to other parts of New Zealand. He talked a great deal about the right of British subjects and of the British Government to make purchases, which gave no satisfaction to the chiefs, and they went away saying, "The Gubbanar no good."

Though Governor Gipps was cautious and puzzled, Governor Hobson seems to have been straightforward and explicit in his replies to questions put by a deputation, who waited upon him to ascertain his intentions and those of the Government. Mr. J. S. Clarke acted as spokesman to the deputation—Captain Hobson was asked whether it was the intention of the British Government to establish a colony in New Zealand? to which he replied that it is the intention of the British Government to colonise the whole of New Zealand, both the North and South Islands. Captain H. was then asked whether it is the intention of the British Government to dispossess those who hold land under titles derived by purchase from the native chiefs? to which he replied, that the Government has no such intention, and he wished particularly to disabuse the public mind on this point, for it is not the intention of the Government to interfere if the purchase have been fair and without fraud upon the natives; but where there are conflicting claims the Government intend to investigate them. In answer to a question respecting the Company formed in London, and called the New Zealand Company, Captain Hobson said, that the Government knows of the formation of the Company, and that its object is to purchase land from the natives, and sell it at a profit, and they have already sold a large quantity of the land that they intend to purchase; and the Government looks with favor upon the Company, because they have undertaken to show all their accounts and to expend seventy-five per cent. of the produce of the land upon the importation of laborers into New Zealand. Captain Hobson said, he hoped that no alarm exists upon the public mind, for all persons may rest assured that they will receive the same justice that is measured out to the New Zealand Company. In answer to the question of whether parties who are expending money in the erection of stores and formation of establishments in New Zealand, had better stop, he said no, there is nothing to fear. This, Mr. Clarke said, was, he believed, the substance of all that took place."

Vessels were taking in cattle to export to New Zealand; and it was supposed that a large trade in stock would soon be established with the new colony.

A company had been formed at Sydney, with a capital of £50,000, to trade chiefly to New Zealand, though it was called the Polynesian Company.

A body of armed police were to be sent to New Zealand.

BELGIUM.**THE BELGIAN RAILROADS.**

Some new tables relative to the Brussels railroads, communicated by the minister of public works to the central section of the Belgian Chamber of Representatives, have just been published.

RAILWAYS AT PRESENT IN OPERATION.

	Sections.	Lines.	Buildings, &c.	Total.
Brussels to Malines	2,917,854	6,744,453	2,977,264	9,421,717
Malines to Antwerp	3,826,599			
Malines to Termond	3,323,422			
Termond to Ghent	4,817,575	15,833,756	1,588,249	17,422,005
Ghent to Bruges	4,846,320			
Bruges to Ostend	2,846,439			
Malines to Louvain	4,728,213			
Louvain to Tirlemont	4,679,581	17,730,473	1,015,448	18,801,921
Tirlemont to Waremme	4,996,343			
Waremme to Ans	3,382,386			
Ghent to Deynze	1,328,313			
Deynze to Courtrai	2,944,784	4,273,097	448,000	4,721,097
Lauden to St. Froud	1,208,418	1,208,418	150,577	1,358,995
Sums engaged for works in execution			320,000	320,000
Costs of the offices, current expenses, &c., } paid to January 1, 1840.	1,120,096		67,000	1,187,096
	46,966,293		6,266,538	53,232,831

SECTIONS PROJECTED, OR IN COURSE OF EXECUTION.

	Sections.	Lines.	Buildings, &c.	Total.
Ans to the Meuse	4,500,000	18,200,000	1,000,000	19,200,000
The Meuse to the Frontier	18,700,000			
Brussels to Tubize	3,951,325			
Tubize to Soignies	3,782,288	13,019,603	2,015,515	15,035,118
Soignies to Mons	3,045,990			
Mons to Quierain	2,240,000			
Mornimont to Charleroi	4,553,056	12,003,709	790,000	12,793,709
Charleroi to Braine	5,200,000			
Courtrai to Mouscron	2,446,321	3,748,826	367,500	4,116,328
Mouscron to the Frontier	630,512			
New Station at Brussels		840,000	500,000	1,340,000
Stations to the North and South of Brussels		450,000	..	450,000
Branch into Antwerp			430,000	430,000
Incidental expenses to the 1st Jan., 1840	190,078		4,000	203,078
	51,558,049		5,356,515	56,894,564
The Cost of Sections in Operation	46,966,293		6,266,538	53,232,831
Total	98,504,342		11,623,053	110,127,395
Cost of Carriages, Engines, &c.	15,537,312
General Total				125,664,707

It may be supposed that this sum will in reality amount to 130 millions of francs. Of the 125 millions in the above general total, submitted to the Belgian Chamber, 57 millions were

expended up to the 31st December, 1839, and there remain at present 68 millions to be provided for, according to the following account.

	Expenses Paid.	To be Paid.
SECTIONS IN OPERATION:—Lines	37,849,730	9,116,563
Sections	2,239,198	4,007,340
SECTIONS CONSTRUCTING:—Lines	40,108,928	13,123,903
Stations	7,395,024	44,143,025
Carriages, &c.	149,346	5,207,169
	9,631,312	5,906,000
	57,284,610	68,380,097

We thus perceive that on the 1st of January last, not one half of the sums presumed necessary for completing the Belgian railroads, had been paid; but of the votes of credit previously passed by the Chamber, for carrying on the works, there are still unexpended rather more than ten millions and a

half. There remain, therefore, more than 57 millions and a half to be provided for. The loan proposed by the government for this purpose, is 54 millions, and the central section proposes to reduce it to 40 millions and a half.

FOREIGN CORRESPONDENCE.

(FROM OUR OWN CORRESPONDENT.)

FRANCE.**ACADEMY OF SCIENCES.**

The dissensions in the French Academy of Sciences, arising from the disputed election of a successor to the late M. Poisson, have been at length compromised. At the sitting of the Academy, on the 8th inst., M. Gay Lussac, the president of the section of physics, having made his report that the section persisted in its former decision, and had unanimously resolved not to supply the vacancy till the customary six months had elapsed, a very animated discussion again arose, in which the principal members of the Academy took part. At length the opinion of the section of physics prevailed, and it was agreed that the section should be allowed its own time for making the election; it being understood, that in case of any long delay, the right of any member to take up the subject again should not be compromised by the arrangement.

At the same sitting, Baron Séguier presented, on behalf of Mr. Patterson, of New York, a model of a machine set in motion by the combined action of the galvanic battery and magnetism.

M. Dumas gave a very favorable account of the application made by M. Selligues of the decomposition of carbonaceous schist, in the production of illuminating gas. M. Dumas described the ingenious apparatus contrived by the inventor for the decomposition of this kind of coal, which is so rich in carbonaceous matter, that the aqueous vapor becomes decomposed and completely converted into carbureted hydrogen gas, which yields a light of the brightest and purest kind.

M. Pelouse communicated, on the behalf of M. Raisé, some new and very curious chemical products, composed of chloride of platinum, hydrogen, azote, and various acids.

After some other communications on surgical matters had been made, M. Stanislas Julien gave some curious details respecting the volcanoes of the island of Formosa. He said he received from China, some months ago, a work entitled Ping thaiwan Ki-llo, signifying an abridged history of the island of Thalwan, or Formosa, published in 1723, by Kien ting youan, who took an important part in the expedition. In the supplement to this work there is the following account respecting the volcanoes. "That a mountain should throw out fire may appear to be fabulous, but that flames should rise out of the sea is more fabulous still; nevertheless, no fact is better attested than this double phenomenon. There are two volcanoes in the island of Formosa: during the day they constantly emit columns of smoke, and during the night a brilliant light issues from them, which may be seen at a great distance. These mountains are situated on that part of the island inhabited by savage tribes, where we durst not land. At the bottom of a mountain peak, of moderate height, a fissure is seen in the rock, from which there rushes a boiling spring. From the midst of heaps of stones, piled in disorder upon one another, jets of flame issue forth, and from the bottom of the water issues a light and brilliant flame, which rises three or four feet, without presenting any trace of smoke. This phenomenon continues day and night. If the root of a plant be thrown into this fissure, a puff of smoke suddenly comes forth, followed by a bright light, and in the twinkling of an eye the root is reduced to cinders." The following notice of a volcanic mountain that rose out of the sea to the south of Corea in the year A. D. 1007, was also read by M. Julien, as being taken from the Chinese work entitled Tong Koné Tong Kien, or General Mirror of the Kingdoms of the East.

"In the twelfth year of the reign of Mou Sing, King of Corea (which corresponds with the year, A. D. 1007), a mountain was raised from the bottom

of the sea to the south of Corea. When it began to rise, thick clouds and vapors spread a profound darkness all around; the earth trembled, and there was heard a noise like that of thunder. In about seven days and seven nights, the darkness began to dissipate, and this mountain was seen. It was about 100 tchang (1,000 French feet) high, and about 40 lés (twelve miles) in circumference. Neither plants nor trees were seen upon it, and a thick smoke shrouded its summit. The emperor sent a learned man, named Thieu Kong Tchi, to examine the mountain, and he made a drawing of it, which was presented to the emperor."

SAVINGS BANKS OF FRANCE.

The Minister of Agriculture and Commerce has, lately, according to the law of 1835, presented a report to the King of the general state of the savings banks of France. This document comprises the details up to the year 1838, and from it we abridge the following particulars. It appears that during the first twenty years of the foundation of these institutions, up to 1830, at which period there were 270 in different parts of the kingdom, they have progressively flourished, notwithstanding the internal convulsions of the country. The number of deposits has greatly increased, and on the 1st of January, 1838, amounted to 121,065, and at the end of December in the same year the number of depositors was 163,196. This fact, it is observed, shows that the commercial crisis of 1837 did not extend to the following year. The proportional payments in 1838 were also considerably less than in 1837; in the latter year out of 80,000,000 francs deposited, 20,000,000 were drawn out; and in 1838, out of 103,000,000 deposited in the banks only 21,000,000 were drawn out.

The following table exhibits the classes of persons composing the 163,196 depositors, with the amounts of their respective balances on the 31st December, 1838.

Trades.	Accounts.	Balances.	Average amount of each.
Workmen	42,778	19,866,559f.	464f.
Domestic Servants	38,576	17,270,935	447
Clerks.....	7,328	4,825,974	658
Soldiers and Sailors	7,799	5,675,823	727
Different trades....	36,259	25,752,604	710
Persons under age	29,958	7,883,103	263
Benefit Societies....	498	439,757	883
Total and general average	163,196	81,714,759	500

In order to show the rapid increase of savings banks, from the earlier years of their foundation, it may be worth while to mention, that from 1818 to 1830, twelve savings banks only were established, whilst from 1830 to 1838 there were 258 new ones opened. From the 1st of January, 1835, to the 31st December, 1838, during three years of the most violent internal agitations, the number of depositors increased 143,869, and the amounts of deposits were augmented 82,779,181 francs.

The Minister, at the conclusion of his report to the King on this prosperous state of the savings banks, makes the following observations:—

"Those results render it unnecessary to insist upon the excellence of an institution so recently established, and yet so successful. It is generally admitted that savings banks constitute one of the most powerful auxiliaries for the moral improvement of the working classes. The country daily experiences the happy effects of an institution which, by promoting the well-being of the inferior classes of society, develops, with the feeling of possessing property honorably acquired, the qualities which constitute an honest man and a good citizen."

ANNUAL MEETING OF THE FRENCH ACADEMY.

The Annual Meeting for the distribution and reading of the prizes, was held at the French

Academy of Sciences, on the 11th inst. The number of gentlemen present did not much exceed twenty, the room being for the most part filled with gaily-dressed ladies. The prizes were principally awarded to historical productions, and flattering eulogiums. Among the works to which prizes were given, were M. Thierry's *Histoire de la Conquête d'Angleterre*; M. de Beaumont's *l'Irlande, Sociale, Politique, et Religieuse*, and *L'Éloge de Madame de Sevigne*, by Madame Tasnié.

DUTIES ON IMPORTATION OF STEAM ENGINES INTO FRANCE.

The committee on the project of law relative to the customs, has introduced some important changes in the project of the government. The most important of these refer to marine steam-engines. According to the government project, the customs duty on the importation of these engines was fixed as low as 10 per cent., the present duty being 30 per cent. The committee is for maintaining the duty of 30 per cent. upon all steam-engines below two hundred horse power, in order to give effectual protection to French industry in the manufacture of engines under that size; in which it is said the French equal the English. But, admitting the inferiority of the English engines of greater power, the committee has taken off the import duty altogether on engines above two hundred horse power. The committee has, besides, established a drawback on the materials in favor of marine steam-engines manufactured in France. This drawback is fixed at 15 per cent. on the value of the engines, and is to be paid whether the engines remain in France or are exported.

The Consumption of Paris in May.—There were consumed during the last month 5,610 oxen, 2,258 cows, 7,374 calves, and 37,458 sheep; and there were imported 495,031 kilogrammes of melted fat. In the corresponding month of last year, there were consumed 6,328 oxen, 1,286 cows, 7,614 calves, 35,730 sheep, and 517,965 kilogrammes of melted fat. The last month, therefore, presents a diminution of 648 oxen and 240 calves, and an increase of 972 cows and 1,728 sheep. The high price of meat during May proves more and more the scarcity of live stock.—*Journal des Débats*.

The Moniteur Industriel continues to draw the attention of the French public to the great and increasing steam marine of England. After mentioning the large Transatlantic ships already built, or in progress, the writer says, besides these large ships, England possesses five hundred steam-packets of smaller dimensions, making a total tonnage of 175,630, and a collective force of 68,145 horses. This enormous development of power, it is observed, though at present only commercial, may be easily rendered warlike.

French Stamps.—The Committee on stamped paper has finished its examination of the different processes proposed to prevent fraud by erasure. Two plans are proposed; one is the adoption of a stamp dated for every day, which would have the double advantage of protecting the revenue from fraud and of rendering it impossible to forge or antedate them. The other plan is, the adoption of a peculiar kind of paper with microscopic designs on it.

There is at present a contention between the Directors of the railroad from Cetoo to Montpellier, and the municipal authorities of the latter town, respecting the supply of water. If the supply of water necessary for the railroad is refused much longer, the directors have resolved to suspend the communication.

According to the last proof trials of the 47,037 muskets belonging to the National Guard of Paris, the following was found to be their condition:—

Muskets in good order, 13,338; requiring repair, 32,580; useless, 1,119. It appears from this proof, that all the repairs that have been made directly at the cost of the town have caused an expense of 93,633 francs, not including 26,709 francs for costs of inspection; being a total of 122,342 francs.

M. Lemercier, a distinguished member of the French Academy, died suddenly last week, on his return from attending a meeting of that learned body. He was interred on Thursday, and a deputation from the Institute, and a number of persons distinguished in science and literature, assisted at the ceremony. Messrs. Villemain, Thenard, de Salvandy, and Arago, were pall-bearers on the occasion. A funeral oration was delivered by M. de Salvandy.

PRUSSIA.

THE LATE KING OF PRUSSIA.

The following account of the last moments of His Majesty, is given by a Berlin correspondent:—"The funeral of Frederick William will take place with great pomp; the Emperor of Russia, the Hereditary Grand Duke of Mecklenburgh, Prince Frederick of the Netherlands, and more than 20 Princes and Princesses, will follow the body to the grave. The following details will give an idea of the effect produced in the Prussian capital by the death of the King. Yesterday morning, the 7th, a courier was sent from Berlin by the Empress of Russia with a pressing letter to her husband, informing him that all hope was at an end, and that death was near at hand. When the interview between the King and his eldest daughter took place, he could only embrace her. The Empress fell on her knees before the little camp bed, which the King would not quit during his illness. At the head of the bed was the portrait of Queen Louisa; the King pointed to this with a gesture to his daughter, indicating his hope of speedily joining his deceased wife in Heaven. The last sacrament was administered by Dr. Eylers, the Protestant bishop. The King was at this time so weak that he could scarcely speak. The Princesses were in the adjoining room, and very few persons were allowed to be present at this solemn ceremony. The Prince de Wittenstein, the oldest friend and servant of the King, was in profound grief. The immediate symptoms of approaching death commenced on the morning of the 7th. An immense crowd at this time surrounded the palace. It will be easily conceived, that in an absolute monarchy, governed from the year 1797 by the same King, who, through good and evil fortune, had maintained his popularity, a change of Government was a circumstance calculated to produce a profound sensation. At about half-past 12, the Emperor of Russia arrived at full gallop in his little travelling carriage by the Rue Royale, in front of the small Palace. The Emperor immediately jumped out in his travelling dress, followed by one of his aides-de-camp. The people took him for a simple military courier. In the saloons of the first floor he embraced his wife and relations, and immediately proceeded to the bedside of the dying King, who was become speechless, but recognised his son-in-law. The Emperor knelt down, and kissed the hand of his father-in-law. The King died without suffering. At 3 o'clock in the afternoon there was no longer any sign of breathing, and a small looking glass which was held before the mouth remained without a mark. The Prince Royal then closed the eyes of his father, and the Emperor of Russia was the first to salute him as William IV. The King having died on Whit-Sunday, when all the population were moving about, the news of the death spread rapidly. The mourning is general, and within a few hours even the poorest workmen were seen with crepe on their arms. The new King proceeded at 3 o'clock in the afternoon to the

palace, and appeared upon the balcony. The act of administering the oaths to the Ministers took place almost immediately. The troops took the oaths over their colors in the barracks. The Emperor of Russia will leave immediately after the funeral; the Empress will repose from her fatigues at the Palace of Sans Souci, near Potsdam, and then go to the baths of Elms. The Queen will go shortly to Charlottenhof, where the King will pass part of the summer. The changes in the Ministry will not be published immediately, as propriety requires that nothing of this kind should be made public during the period of the mourning. The Council of State will take the oaths to-day, and a proclamation will also appear. Do not place any faith in what you may hear as to the words of the Emperor Nicholas, and which are said to have been pronounced shortly after the death of the King. His grief at the moment was too great for him to make any political allusions, and the words in question were not heard by the most intimate servants of the late King. On leaving the Palace, the Prince Royal, now become King, was so much affected, that the public were forcibly struck with his appearance. The new King said to his consort, sister of Louis of Bavaria, "Support me, Elizabeth, for I am now more in want of assistance than ever." —*Galignani's Messenger.*

SOUTH AUSTRALIA.

Extract of a letter, dated Adelaide, Dec. 9, 1839: — "The colony of South Australia is prospering under our estimable and indefatigable Governor, Colonel Gawler, and the only drawback to it that I know of, is the increase of worthless and bad characters that are found amongst us, and the impudent attempts of every low butcher and baker to set up for gentlemen; but the radicals and democrats, though numerous, are as yet generally, thank God, very insignificant; and long may they continue to remain so! Colonel Gawler's admirable policy has completely swept away all traces of party spirit, and all seem to unite in admiring, praising, and confiding in him. I have been of late a good deal into the interior, to the north and south of Adelaide, and look upon the latter country as by far the finest and the best. About September next (during the wet season) I intend, with my friend and partner —, to take a trip to the north of Spencer's Gulf, and explore in that direction, and endeavor, if possible, to ascertain the extent of the supposed inland lake or sea, about which the Governor is anxious to learn further particulars. I love my adopted country and climate as much as ever, and would not return to England were I the richest man in South Australia. I have a very handsome house and property about ten miles to the south of Adelaide. I was the first settler who ventured so far south of the capital, but now there are hundreds beyond me, and as broad and as well defined a road close to my house as any to be met with in England. This is in truth a most wonderful country."

STEAM COMMUNICATION WITH THE WEST INDIES.

The contract of the "Royal Mail Steam Packet Company" with the commissioners, has just been printed, in return to an order of the House of Commons. The company covenant to keep a sufficient number (not less than 14) of good and efficient steam-vessels, which shall be able to carry guns of the largest calibre now used on board of steam-vessels of war, supplied with engines of not less than 400 collective horse power, as well as with men, apparel, &c., and be of at least 1,000 tons burthen. One of these vessels is to leave a port in the British channel twice in every calendar month, and proceed to Barbadoes as soon as the mails are on board. After an interval not exceeding six hours from her arrival

there, she is to proceed to Grenada, and after remaining a time not exceeding 12 hours, go with the mails on board to Santa Cruz, thence to St. Thomas's, thence to Nicola Mole in Hayti, thence to Santiago de Cuba, and thence to Port Royal in Jamaica. After remaining at Port Royal for an interval not exceeding 24 hours, the vessel, after delivering her mails and receiving others, is to proceed to Savannah la Mer, and after a delivery and receipt of mails there, to Havannah in Cuba. After an interval not exceeding 48 hours, she is, on her return, to proceed from Havannah to Savannah la Mer, thence to Port Royal, thence to Santiago de Cuba, thence to Nicola Mole, thence to Samana in Hayti, delivering and receiving mails at each place, care being taken that she shall always arrive at Samana, after performing her voyage from Barbadoes, on the 22d day after the arrival of the mails at Barbadoes from England. From Samana she is to make the best of her way back to England. Immediately on the arrival at Barbadoes of every steamer employed under the contract, another of such steam-vessels is to proceed with her mails from Barbadoes successively to Tobago, Demerara, Berbice, and Paramaribo. The period of delay at Paramaribo is not to exceed 48 hours, and then the vessel is to proceed to Berbice, Demerara, Tobago, Grenada, and Barbadoes, always arriving at Barbadoes in time to depart immediately for Tobago on the arrival of one of the vessels at Barbadoes from England. On the arrival at Grenada of a mail from England, another of the steam-vessels is to proceed from Grenada successively to St. Vincent's, St. Lucia, Martinique, Dominica, Guadalupe, Antigua, Montserrat, Nevis, St. Kitt's, Santa Cruz, Tortola, St. Thomas's, St. Juan's (in Puerto Rico), Samana, Curacao, Porto Cabello, La Guayra, Trinidad, and thence back to Grenada, so as always to be ready to depart thence with the mails on their arrival from England. Another vessel, likewise, on the arrival at Grenada of the mails from England, is to proceed with the mails successively to the Port of Spain (in Trinidad), La Guayra, Porto Cabello, Curacao, Samana, St. Juan's, St. Thomas's, Tortola, Santa Cruz, St. Kitt's, Nevis, Montserrat, Antigua, Guadalupe, Dominica, Martinique, St. Lucia, St. Vincent's, and thence back to Grenada, so as to be ready to depart immediately on the arrival of a mail from England. On the arrival of any vessel at Curacao from Grenada, a sailing vessel is to be ready then to proceed from Curacao to Santa Martha, and thence to Cartagena, where she is to remain 24 hours, and then return to Santa Martha and Curacao. On the arrival of a mail from England at Nicola Mole, another sailing vessel is to proceed thence to the Bahama Islands, and after remaining at New Providence for not more than 72 hours, return to Nicola Mole in time to meet the steam-vessel. On the arrival of the mail from England at Port Royal, another steam-vessel is to proceed thence to Chagres, Cartagena, Santa Martha, and thence back to Port Royal in time to meet the return vessels from Havannah. On the arrival of the mails from England at Savannah la Mer, another sailing vessel is to proceed thence to Trinidad de Cuba and Belise (in Honduras), where, after remaining 48 hours, she is to return to Savannah la Mer by the same route. On the arrival at Havannah of the mails from England, another steam-vessel is to proceed thence with the mails to Vera Cruz, Tampico, Mobile, or such other port as the commissioners shall determine, returning from the last port to Havannah in time to depart for Vera Cruz immediately on the arrival of the English mail, and another to the Gulph of Mexico, Tampico, and Vera Cruz, and then back to Havannah to meet the mails. Another steam-packet, on the arrival of the mails from England at Havannah, is to proceed to Matanzas in Cuba, and to New York, stopping at intermediate ports to be named by the commissioners, and thence to Halifax, returning back to Havannah by the same route on the arrival of the mails from England. The contract is to commence on the 1st of December, 1841, or at an earlier period, if mutually agreed, and to continue in force for 10 years from the first day on which the first vessel put to sea for Barbadoes, and for a longer period, unless determined by 12 months' notice in writing.

RAILWAY INTELLIGENCE, DOMESTIC AND FOREIGN.

OPENING OF THE GREAT WESTERN RAILWAY TO STEVENTON.—On Monday (the day fixed for the opening of the railway) it was fortunately fine; and at an early hour, crowds flocked to witness the departure of the first train. Steventon is only ten miles from Oxford and four from Abingdon. Numberless were the vehicles, filled with passengers of all descriptions, that flocked to the station, to say nothing of the pedestrians, who were very numerous. A quarter past eight was the time fixed for the departure of the first train from Steventon. A new engine, the Tiger, was put on the rails, decorated with flags of many colors, and garlands of flowers and evergreens. There were four carriages, two of the first class and two of the second, each containing 72 passengers. The train left Steventon, amidst the cheers of the assembled crowd, at ten minutes past eight, reached the Moulsford station at 24 minutes past eight, stayed there 2½ minutes, reached Pangbourne at 37½ minutes past eight, stayed two minutes, reached Reading at 50 minutes past eight, stayed ten minutes for the purpose of putting on two second and one first class carriages, reached Twyford at 12 minutes past nine, stayed 1½ minutes, reached Maidenhead at 28½ minutes past nine, stayed 3½ minutes, reached Slough at 46 min. past nine, stayed 3½ minutes, and then passing all the intermediate stations, arrived at Paddington, its final destination, at 21 minutes past ten, completing the journey of 57 miles in two hours and eleven minutes; or, deducting the 23 minutes for stoppages, in the short space of one hour and 48 min. The speed of travelling is of course unequal, from the stoppages at the different stations, but one mile, between Steventon and Pangbourne, was done at the terrific rate of 60 miles an hour. This was merely to show the power of the engine, the average speed being 31 or 32 miles an hour. The scenery on different parts of the road is splendid, more especially near the Pangbourne station; you catch a glimpse of Reading as you pass the station, which seems to be building on a grand scale: the other parts of the road are no doubt familiar to our readers. The first train on the Tuesday morning, by the Evening Star, reached Steventon from Paddington in two hours 10½ minutes.

The journey from Oxford to London may now be performed easily in three hours and a half, so that persons (as several to our knowledge did on Monday) may leave Oxford early in the morning, spend eight hours in London, and return to Oxford the same evening. Whether this will operate to the injury of the many, or only of the few, remains yet to be seen.—*Oxford Herald.*

BIRMINGHAM AND DERBY RAILWAY.—STATION AT OAKLEY.—We understand that the directors of the Birmingham and Derby Junction Railway Company have determined upon making Oakley, near Alrewas, a station. On Monday next, one train to Birmingham and one to Derby will stop at Oakley, both in the morning and in the afternoon; by which arrangement, great accommodation will be afforded not only to the immediate neighborhood of Alrewas and King's Bromley, but even to Rugeley and Lichfield; the station at Oakley being only ten miles from the former and six miles from the latter place. It is also expected that a depot of coals from Derbyshire will be formed there, for which there is no doubt the surrounding villages will furnish a large and steady demand.

BIRMINGHAM AND GLOUCESTER RAILWAY.—The permanent way between Cheltenham and Bromsgrove being completed, some experimental trips have been made along that portion of the line. On Tuesday evening, a party of the directors made the journey. A high speed was not aimed at; the journey from Cheltenham to Bromsgrove (31½ miles) was performed in an hour and a quarter, exclusive of stoppages. Other conveyances followed that occupied by the directors, and the number of spectators at different points of the

route made a very animated scene. At the Bromsgrove station, the train, on its arrival, was saluted by a brass band. The performers afterwards mounted one of the open carriages, and went as far as the Spetchley station, whence the directors proceeded in files to Gloucester. The opening of the line to the public is fixed for the 8th of July, by which time it is supposed, the permanent way will be completed to Barn Green, eleven miles from Birmingham. It is expected that the whole line from Gloucester to Birmingham will be completed in seven or eight months.

MIDLAND COUNTIES RAILWAY.—We are glad to find that the traffic upon this line is considerably on the increase, not only in respect to the number of passengers, but in the quantity of merchandise, &c. It is expected that the whole of the line of this important railway from Nottingham, and from the junction with the London and Birmingham, at Rugby, will be open to the public in the course of the present month, and we anticipate that numbers will avail themselves of the facility which will thus be afforded, not only for the transaction of business between several important manufacturing towns, but also for a delightful trip on one of the most beautiful, varied, and picturesque lines of railway which the country can boast.—*Leicester Journal.*

OPENING OF THE NORTH MIDLAND RAILWAY TO LEEDS.—This great line of railway, which is to connect Leeds and the heart of Yorkshire with London, Birmingham, and the West of England, will be opened to Leeds on Tuesday, the 30th of this month. On that day the directors and their friends will pass along the line, probably throughout its whole extent, namely, from Leeds to Derby and back; and, on the following day, the 1st of July, the line will be open to the public for travelling. We understand that the company are now ready to transport goods and minerals on the portion of the line already opened from Sheffield to Derby; hitherto only passengers have been conveyed. We find that the trains have been travelling with the utmost regularity, very frequently performing the distance several minutes within the time specified. The greatest exertions are now making to complete the railway station at Leeds, where there is a shed 300 feet in length, and wide enough to allow of six lines of rails. The shed is supported by thirty cast-iron columns of elegant form.—*Leeds Mercury.*

GLASGOW, PAISLEY, GREENOCK, AND AYR RAILWAY.—The tunnel at Arkelston is now sufficiently excavated to allow a passage for a locomotive engine. On Saturday last, the one built by Messrs. Barr and M'Nab, and placed a few months since on the railway to the eastward, was pushed through, and on Tuesday arrived at the dépôt here. As this was the first time a locomotive engine had crossed the Cart, and reached the centre of the town, her appearance excited rather a sensation among the spectators. She has since been employed daily, and facilitates the work to a great extent. This building for the various offices is nearly at its full height, and will be ready for the roof in a few days. It is altogether a very handsome building. It is of the same turreted style of architecture as the County Buildings, with which it agreeably harmonises. The Directors, we understand, are sanguine as to the opening of the communication between Glasgow and Paisley very early next month.—*Paisley Advertiser.*

PASSENGER TRAFFIC ON THE MANCHESTER AND BIRMINGHAM RAILWAY TO STOCKPORT.—Since the opening of this line from Manchester to Stockport, on Thursday last, the number of passengers daily has been as follows:—On Thursday, 2,169; Friday, 1,690; Saturday, 2,060; and on Sunday, when there were only four instead of thirteen trains each way, viz. two morning and two evening trains, no fewer than 3,500; being a total in the first four days of 9,419, or one short of a daily average of 2,355 passengers.—*Manchester Guardian.*

MANCHESTER AND BIRMINGHAM RAILWAY.—**OPENING OF THE LINE TO STOCKPORT.**—On Thursday morning, the portion of this line of rail-

way completed between Manchester and Stockport was opened to the public, the first train starting from Stockport at seven in the morning, and from Manchester at half-past 7. The trains continued to run from each town hourly during the day without the slightest obstruction or accident. The total number of passengers conveyed on the line during the day was 2,169 in twenty-six trains of four or five carriages each. Owing to the shortness of the distance and the fineness of the weather, a large majority of the passengers travelled in the third class open carriages. All the coaches and omnibuses between Stockport and Manchester have ceased running, with the exception of two. The company have made arrangements with Mr. Thomas Edmondson, of the Manchester and Leeds Railway station, at Manchester, for the adoption of his admirable system of printing and issuing tickets for the passengers, (a plan described in a former number of our paper.) The trains are found to make the trip on an average of thirteen or fourteen minutes; and if they had not to stop at Rushford, they would accomplish the distance in ten minutes. The company, at present, use only one line of rails for the transit of passengers, the other line being kept for the use of the earth wagons and carts of the excavators employed on the line. This arrangement, besides having the advantage of enabling the company to push on their works with greater speed than if both rails were constantly travelled by passenger trains, is also attended with the no less important benefit, on a line just opened, of removing the remotest chance of accident from a collision of trains on the same rails, or from their meeting on different rails, where many workmen are engaged on the road. Altogether, the opening of the line has been most satisfactory.—*Abridged from the Manchester Guardian.*

THE GREENWICH RAILWAY.—The following is an official return, and shows the actual number of passengers, and the amount of money received, from the 7th to the 11th inst. inclusive, being for Whit'sunday and the holidays following:—

Sunday, June 7.	11,367	£400	1	5	
Monday,	8.	27,137	960	10	0
Tuesday,	9.	15,399	633	3	10
Wednesday, 10.	8,078	275	18	3	
Total . . .	51,981	£2,169	13	6	

THE LANCASTER AND PRESTON RAILWAY.—The directors of the Lancaster and Preston Junction Railway have felt themselves called upon, by the advice of their engineer, Mr. Locke, to postpone the opening of the line for a short period. The opening, which had been advertised for the 18th of June, might have then taken place, as one line of rail would have been laid in time, but as it has been found by experience that considerable danger is incurred through the carelessness of workmen employed on the line, at the time of the trains running, the directors feel they would be incurring a heavy responsibility in exposing the public to any accident. The opening day, we believe, is fixed for the 22d.—*Preston Pilot.*

CORNWALL AND DEVON RAILWAY.—The railway sub-committee met on Friday, the 29th ult., at the council-room, Truro, on which occasion Mr. Fox presented his report respecting the traffic of the county of Devon, and having concluded his labors, received directions to proceed to Worcester and Birmingham, for the purpose of laying the result of his inquiries before the parties there who have volunteered their services in arranging the details, and deciding to what extent the present traffic of the two counties can be brought to bear upon the projected railway. In a short time, we hope we shall be enabled to convey such information to the county as will justify it in immediately entering upon this important undertaking, rendered now more pressing than ever, from the inquiries about to be made into the relative merits of Falmouth as a packet station, in comparison with other ports in the English Channel.—*Falmouth Packet.*

BORDEAUX.—**Consumption of Iron.**—One kilogramme of iron; of which quantity 500,000 kilograms are imported from England, and 200,000 from Sweden. The rolled iron comes principally from England and Angleterre; the thin steel iron is also supplied chiefly from England. There are about from 5,000 to 6,000 boxes of sheet tin used annually in Bordeaux; one box of tin sells nearly 3,000, and the whole of it is of English manufacture. There are two depôts for sheet copper at Bordeaux, the consumption of which is very great for the sheathing of ships, and a great deal is also used by the manufacturing braziers. The quantity of oil consumed at Bordeaux, does not exceed 241,840 quintals; of which 200,000 are imported from England. This small comparative consumption of coal, arises from the proximity of the pine forests, which supply an excellent combustible at much less price than coals can be purchased.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our Number of to-day.

TO CORRESPONDENTS.

INQUIRIES & NOTICES

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
Bogota	Denmark	Nevia
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Bermuda	Greece	Quebec
Brazils	Grenada (New)	Spain via Cadiz
Bremen	Hallifax	St. Domingo
Buenos Ayres	Hamburg	St. Kitts
Canada	Helligoland	St. Lucia
Caracas	Honduras	St. Vincent's
Cartagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
Colombia	Lugayana	Trinidad
Corfu	Malta	Zante
Cuxhaven		

It will be transmitted, upon payment of one penny, to India, the Cape of Good Hope, and New South Wales.

To all other places, it can be forwarded on payment of two-pence.

"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 O'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their News-men, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE" will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS I to II, ARE NOW READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"William Smithson," Glasgow.—Our Correspondent has been anticipated; he will find by referring to the Index of our 1st Vol. that no fewer than four patents have been taken out for the same article.

"T. A." Southampton.—Yes, the Attorney General has the power of granting a longer period for the enrollment of a specification, if the patent is not sealed.

"R. B. P."—Certainly not; the deed is void.

"J. W."—The specification referred to, will be due July 11, and will appear in the "Inventors' Advocate" of that day.

"Junius."—Some amelioration in the particular you mention, was attempted by 5 and 6 W. 4, c. 83, s. 2.

INDEX TO VOLUME I.

The INDEX to complete the FIRST VOLUME of the "INVENTORS' ADVOCATE" is now ready; also THE VOLUME, strongly and handsomely bound.

TO INVENTORS.

ALL PERSONS who may be desirous of **TAKING OUT PATENTS**, or of bringing **VALUABLE INVENTIONS** into **USE**, are requested to **APPLY** to the **PROPRIETORS** of "**THE INVENTORS' ADVOCATE**," (DELIANSO CLARK & CO.) at their "**PATENT AGENCY OFFICE FOR ALL COUNTRIES**," 39, CHANCERY LANE, where they may be consulted, daily, relative to the **PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES**.—(See **ADVERTISEMENT** on the last page of the present Number.)



THE INVENTORS' ADVOCATE,
AND
JOURNAL OF INDUSTRY.

SATURDAY, JUNE 20, 1840.

The late division in the House of Commons, on the Corn trade question, is decisive as regards the opinion of that branch of the legislature respecting any alteration in the present system; and no change in it can now be reasonably expected for some years; unless indeed a season of pressing scarcity should produce a popular excitement on the subject, which it may not be considered prudent to resist.

In addition to the power of argument on this question, which has for years past been making sure but slow progress, there has lately been added the force of agitation; but instead of assisting the anti-corn law cause, it appears to have done it serious injury. The violent language of some of the agitators, who have travelled through the country, endeavoring to create dissatisfaction among the working classes, and stigmatising the landed proprietors as their greatest enemies, has alarmed many who might otherwise have been disposed to take a dispassionate view of the subject, and to make some alteration in the existing system. Finding, however, that nothing short of the total abolition of all protection is aimed at, they think it better to make a determined stand on the maintenance of the present system, with all its defects, than to begin a change which is

declared to be only intended as the fulcrum for more extensive, and, as they consider, destructive alterations. It is this dread of unknown ills that constitutes the check to all practical reforms, and we regret that the fears of the agriculturists should have been thus needlessly awakened by the method adopted to urge forward the question of corn law reform. It is to argument alone that we ought to trust to make any serious impression on the minds of the farmers and landed proprietors, and all attempts to consider the question as one in which their interests are opposed to the interests of the manufacturing classes, are only calculated to set them more fixedly against any change.

The principal recommendation urged in favor of the present system, on its introduction, was, that it would produce steadiness in prices. The adjustment of the import duties on foreign corn, according to the scale of the average prices of corn in the markets of this country, would, it was confidently imagined, have kept prices nearly at the same level; as the entrance into consumption of foreign corn at a reduced duty when the price of home-grown corn became higher, it was supposed, would have the effect of regulating the supply exactly to the demand. If the present corn law produced that effect, bad as its operation might be in other respects, then, indeed, its influence would be most beneficial; for nothing is so injurious to farmers as well as manufacturers, as constant fluctuations in price, especially when the article in question is the staple of daily food, and regulates more or less the wages of labor. The present corn laws have, however, notorious failed to produce their intended effect, and, in unfavorable seasons, they have the direct tendency to occasion the inequality of price they were proposed to remedy. The great uncertainty that always exists at present respecting the rate at which foreign corn may be imported into England, renders it a complete matter of speculation to the foreign growers whether they will cultivate corn for the English market. If they do not, and a year of scarcity comes, there is no superabundant corn to be found to supply our wants. Our ports may be open on payment of merely a nominal duty; but as the agriculturists abroad could not anticipate the opening of such a market, they have little corn to supply the demand beyond what is requisite for the consumption of their own country. Popular tumults are excited if any portion of this limited quantity be exported, and the

government of the country is obliged to interfere to prohibit the export of a commodity which might, in other circumstances, have been a regular and profitable source of trade. We thus actually create the state of things in time of peace, that some alarmists contemplate as the possible consequence of depending on foreign countries for a supply of food in time of war. We depend in a great measure on foreign nations for an adequate supply, and yet the effect of our laws is to compel them to refuse it when most wanted.

If the present fluctuating scale of averages were abolished, and a fixed duty on the importation of foreign corn were imposed in its stead, the foreign grower would be able to make his calculations from some reasonable data, and if he found the price of wheat in England, in average seasons, was high enough to remunerate him for cultivating corn for our market, after paying the freight, duty, and other charges, he would act accordingly. We presume that the duty would be fixed sufficiently high to place the English cultivator at least on an equal footing with the foreign grower, when their products came into competition in the market; and as any fall in prices would operate more onerously on foreign corn than on English, on account of the heavy fixed charges on it, independently of the costs of production, the importers would, for their own protection, take care to avoid a glut of the market.

On every view of the subject, it appears to us that the principle of a fixed duty, if it be not prohibitive, is far preferable to the present uncertain and unsatisfactory plan; and we hope that the agriculturists will ere long see the folly of maintaining a system that has been found after many years experience, totally inadequate to effect the purposes for which it was contrived.

THE THEORIES OF LIGHT AND VISION.

The sense of sight, though the most delightful, perhaps, of the five senses, is nevertheless the least to be trusted. Our hearing, touch, smell, and taste, seldom deceive us; but the sight frequently leads us into error and uncertainty. Images of objects are sometimes distinctly seen, that have no real existence, to the exclusion of others that send rays of light to the eye; and more frequently, real objects appear distorted, and very different in regard to their distance or their position, from their true figures or places. The sci-

ence of optics appears to participate in the uncertainty and error of the sense to which it more immediately relates. Some of our most distinguished men have devoted their time to elucidate the wonderful phenomena of light, but hitherto its subtle nature has eluded their grasp. Theories upon theories, indeed, have been formed, that were thought to account for most of the observed phenomena, when new discoveries rendered it again necessary to invent other theories to explain them; and the present state of the science must appear to a mind coming fresh to the investigation, to be extremely unsatisfactory and perplexing in all that refers to the nature and action of light.

In the new theories of light, we are told that certain impressions will be produced by "ethereal undulations," that are repeated *458 millions of millions of times in a second*, and of other effects that are produced when these undulations amount to double that number;—the exact magnitude of the undulations of different colored rays of light is given, and the difference of their respective waves is estimated, even to the ten millionth part of an inch;—certain effects are announced to be produced when these waves coalesce; and others when they contend against each other at certain angles: we are told that light is subject to fits of reflection and transmission, and that certain dark spaces on the solar spectrum indicate the absorption of unknown colors by the atmosphere of the sun. All this, and a great deal more that is astonishing, the student of the science of optics has to learn and wonder at, and, if he can, believe.

In proportion to the mysterious nature of light and its properties, appears to be the minuteness with which they have been examined, and the confidence of optical theorists in the correctness of their views; and they conceive that, aided by the abstruse calculations they have made, and the incomprehensible magnitude of the numbers they have deduced, that optics may now be ranked among the exact sciences.

Without pronouncing any decided opinion on these ingenious theories of light, we must say, that our faith is somewhat shaken by their seeming want of the simplicity we are accustomed to expect in the laws of nature; and that some of the speculations they contain, appear rather the work of imagination than the reasonings of philosophy. We are the more disposed to withhold our implicit credence in these theories, from the manner in

which they are now inculcated as established truths, for nothing has a greater tendency to obstruct the progress of scientific discovery than to keep the mind hermetically sealed against additional light by preconceived notions. The same dogmatical spirit that would now force us to believe the undulatory theory, with its accompanying mystifications of polarisation, interferences, diffractions, &c., would, but a short time ago, have insisted on our believing the theory of inverted vision. Nay, even to this day, most of the works that treat on this subject, continue to insist on the fact that all objects are naturally seen inverted, and that their true positions can only be ascertained by an early exercise of the reasoning powers. So narrow-minded a view has been, and still is, taken of this subject, that even those writers who ridicule the notion that objects are seen inverted, appear at the same time to consider the question to be attended with considerable difficulty, and the attempted explanation of it by the law of visible direction does not in our opinion remove that difficulty, whilst it involves the absurd principle of "topsy-turvy" vision.

As absolutely nothing is known of the physical operations of the human mind, it would be irrational to conclude, in opposition to the simplicity of all the works of nature, that external objects are viewed in an inverted position by the mind, even could we distinctly trace an inverted image of them impressed upon the brain itself. But no approach to this has been, nor can be made. We can only discover that an inverted image is formed on the delicate ramifications of a nerve spread out to receive them—the nerve being in its collective form insensible to the direct rays of light—and that they must be conveyed by some means totally distinct from the ordinary transmission of light to the brain, there to produce, in some inscrutable manner, their effect on the sense of sight. It is altogether a gratuitous assumption, without any foundation in fact, and altogether subversive of reason, to imagine that the mind must receive the impressions of the images of objects exactly in the same manner and form that they are brought to a focus on the retina; and we are at a loss to express in terms sufficiently strong our sense of its absurdity.

If a society of Cherokee philosophers were to entertain the notion, that the mind sits with its spectacles on at the back of the eye, to catch the objects as they are presented there, all the world would laugh at the drollery

of such a speculation: but a similar idea to all intents and purposes, though not so expressed, has been entertained and inculcated by the philosophers of civilised Europe, to the middle of the nineteenth century. This fact, posterity will record with wonder among the curiosities of science.

NEW INVENTIONS.

PURIFICATION OF ROSINS.

The method pursued in the forests of Bordeaux, for extracting rosin, is to make an incision in the bark of the pines, and the resinous fluid flows into a small reservoir placed at the roots of the tree. This rosin is mixed with splinters of wood, with insects, earth, &c., and it is therefore requisite, before the rosin can be sold, to purify it. To do this, it is boiled in uncovered boilers, and the hot liquid is poured upon filters made of straw, after passing through which, it is put into a still to extract the essence of turpentine. The straw filter is renewed at every operation, and contains more or less resinous matter, which is converted into dry rosin, and thus loses a part of its value; as the boiling of the liquid rosin, in the open boilers, causes it to lose portion of its volatile essence. M. le Comte de Lambel has made several attempts to improve the process, and to remove the difficulties and inconveniences attending it. The straw filter, besides the inconvenience of retaining part of the resinous fluid, is also objectionable on account of its yielding only an opaque, and consequently impure residuum; he therefore endeavored to substitute for it some other kind of filter, which might be heated to the temperature of the melted rosin, so as to allow it to run through, without the necessity of renewing the filter, and that might be used without the necessity of losing any of the rosin. To effect this object, he employed a filter composed of coarse grains of sand. This filter may also be advantageously used for the purification of syrups.

Through this filter, the rosin passes pure and transparent, after placing upon it a wire sieve of suitable coarseness, for the purpose of straining out the grosser impurities. The filter, when cold, can be entirely deprived of the resin it retains, and thus the principal object to be desired has been attained. When the filter was placed in a stove, the heat of which could be gradually increased, different qualities of pure and transparent rosins could be obtained. When a still-head was placed on the top of the stove, and hermetically sealed, the essence which escapes in the open boilers could be collected. The stove, set in masonry, can be placed without inconvenience, at a little distance from the distilling apparatus; it might even, by means of a stop-cock exactly ground, allow the liquid purified rosin to flow, without any trouble or cost of carrying, into that apparatus. It has been found, also, that the rosin which crystallises at certain periods of the year on the trunks of the trees, and on the incisions that have been made in them, might be dissolved in the essence of turpentine, and purified with advantage, should the increased value of this product pay for the expense of a second distillation.

HYDROSTATIC BLOWPIPE.

This new method of uniting lead, which its inventor, Le Vicomte de Richemont, has named "Autogenous soldering," and for which patents have been obtained by Mr. Charles Delbruck, consists briefly in effecting the union of the parts to be joined by fusion of the metal at the joints or lines of junction, without the addition of any alloy or connecting metal.

The operation is accomplished by means of jets of intense flame, produced by the combustion of hydrogen and common air, conveyed through a caoutchouc tube, so flexible as to be as easily

manageable with the hand as any ordinary tool. M. de Riebenmonte has denominated this instrument the "aerhydric blowpipe."

The advantages of this new mode of soldering are obvious. The joint being of the same metal, is necessarily secure from the chances of leakage, which in the method hitherto practised arises from the difficulty of making solder perfectly adhere to a leaden surface, from the extreme brittleness of the alloys, which sometimes break on the slightest blow, particularly when heated; from the difference in the expansive property of the lead and its alloys with tin; from the electro-chemical action which sometimes take place when two heterogeneous metallic substances are in contact; and from the reaction which a number of chemical agents exercise upon alloys of lead and tin, though not upon lead alone.

The entire suppression of solder by the new method, will prove particularly advantageous in the construction of boilers for the making of acids, and for the concentration of saline solutions; in the making of lead chambers for sulphuric acid, the construction of which has hitherto been attended with much difficulty and expense; and in the manufacturing of chemical utensils of all kinds, and even in the invention probably of new ones; by the facility afforded of lining with thin lead, wood, copper, or iron, and thus combining the chemical strength of the former with the mechanical strength of the latter; barrels, for instance, may be lined for the transport of sulphuric and other acids.

But perhaps the greatest advantage will be the economy of the process, arising from the total disuse of solder, in comparison with which the cost of hydrogen is inconsiderable.

Independently of this application of the new blowpipe to the joining of lead, it may be usefully employed for uniting lead with iron, copper, brass, or zinc, or any of these metals with the others, by the intervention of pure lead as a solder.

It may also be employed in brazing and welding, and will thus obviate the injurious contact of coals, an important object in the construction of tubes for locomotive engines.

It may likewise be advantageously substituted for the common blow pipe by silversmiths, plate-workers, and others, for instead of bringing the article to the flame, as is necessary with the common blow pipe, the new blow pipe can be conducted at will, with the hand to any point of the work; and as the intensity is so much greater, that it melts even platina, its application of course may be extended to works of much larger dimensions.

Another peculiar application of the aerhydric blowpipe is deserving of notice. The soldering irons adapted to all the purposes of tinmen, zinc-workers, &c., may be sufficiently heated in a few seconds, and the heat being nicely regulated by means of cocks adjusted to the pipes, they can be kept constantly at the required degree of temperature; hence a saving of manual labor and expense.

Hydrogen being produced by the action of sulphuric acid on cuttings of zinc or turnings of iron, the residuum is sulphate of zinc or iron, both saleable articles.

The process is in operation at the establishment of Messrs. Andrew Clark and Son, plumbers, Southwark, where we understand leaden vessels of any description may be obtained.

Our readers will be gratified to learn, that the process may also be viewed in constant operation at the Royal Gallery of Practical Science, where a number of ingenious inventions are also to be seen in the course of practical application. When last we visited this gallery we found that Mr. Delbruck's operator was constructing by this process a very ingenious new hydrogen gas generator for Mr. E. M. Clarke's gas microscopes and polariscopes, in fulfilment of a design of that artist to do away with the old apparatus for that purpose, which if made of cast lead is very heavy, yet still liable to cracks and flaws; and if made of sheet lead, soldered as usual, is always liable to leak in progress of time

from the action of the sulphuric acid on the alloy. By the new mode, the gas generator is now formed at once strong, light, and safe.—*Post.*

VARIETIES.

Antiquarian Village Aviary.—We have been highly gratified by a visit to the Antiquarian Village Aviary of Mr. PURLAND, the celebrated dentist, of 59, Mortimer-street, by whom it was devised, laid out, and executed. It was with him a "labor of love," for he is an enthusiast on the subject of birds; no wonder therefore that he devoted six months of his valuable time to preparing them such an earthly Paradise. Our pen is so completely unable to render justice to the feathered inhabitants of this Fairy Land, that we content ourselves with directing general attention to them and their "Palace of Beauty." The Village, with its rustic windmill, its wooden bridge, its hills, its dales, its beautiful pell-mell stream, meandering through the heart of the "Fairy Land," its anglers, swans, ducks, geese, and "auncient" inhabitants,—form altogether a picture of quiet, still life, of which little idea can be conveyed by any attempt at description. Of the living inhabitants, we shall only remark that they are every way worthy of their kingdom, watching over its welfare with constant assiduity, and taking a bird's-eye view of all that is passing in their dominions from sunrise to sunset. We should add, that the inhabitants live, for the most part, in great harmony, and that when their voices are raised, it is to *Concert* pitch. It is true that war does occasionally break out, but the issue is not long doubtful. The stronger party asserts his rights and defends them, and as this is well known to be "the law of the land," disturbances are not of very frequent occurrence. We trust our remarks will suffice to awaken curiosity, and that our readers will verify the truth of what we have asserted. Mr. PURLAND does not make a public exhibition of his Aviary; but his courtesy is such, that a polite note, accompanied by a card, will procure gentlefolks a ready admission.

Rossini in Retirement.—The following account of this distinguished musician is given in the *Siecle*:—Retired to his native town in Italy, Rossini contented himself with the great success which marked his career, and lives at his ease like a conqueror resting after his labors. The god of music has become a good citizen, passing his time in eating and sleeping. The amusement he most delights in, is angling, and he now enjoys more pleasure in catching a gudgeon, than he formerly did in composing his most beautiful melodies. He is a rich man and he is saving money. His fortune amounts to a hundred thousand livres, gained not by his musical compositions, but in speculation, and his expenses do not exceed fifteen hundred francs a year.

The sale of jewellery at the late fair of Leipsic, greatly exceeded that at any previous fair. In tourquoises alone, the business in which is generally very trifling, a single sale was effected amounting to 18,000 Saxon crowns. Many jewelers, it is said, transacted business to the extent of several millions, to the great astonishment of every one. A great portion of these jewels are reported to have belonged to some foreign princes.

France.—The prize for the best essay on the question, "What has been the progress of public rights in Europe, since the peace of Westphalia in 1648 to the present day," which had been proposed for the second time in 1838 by the French Academy of Moral and Political Sciences, was awarded on

* The Collection includes,—Blackbirds, Thrushes, Robins, Tit Larks, Woodlarks, Yellow-hammers, Chaffinches, Goldfinches, Canaries, Tom-tits, Water-wagtails, Red-poles, &c. Each one of these takes possession of a dwelling-house; and, at bed-time, they all prove to a demonstration that "possession is nine points of the law."

the 30th ult., to the essay of M. Maurice de Hauteville, of the Foreign Office.

Belgium.—At the Bazaar of the Royal Society of Horticulture at the Botanic Garden of Brussels, there are now to be seen some fruits of the vanilla tree, *vanilla aromatica*, cultivated by Professor Morren, of the University at Liege. The exhibition of these fruits in a state of maturity, is a sufficient answer to the doubts of the possibility of ever being able to procure in our green-houses such a produce of this valuable aromatic plant, as to supply the present consumption, and to place it within the reach of all classes.—*Brussels paper.*

The Dry Fountain.—An American correspondent sends us an account of the drying up of a fountain, called the Silver Springs in Florida, which had never before failed, and was relied on by all living things in that region as exhaustless. Its name (he observes) was naturally suggested by its bright aspect. "In the depth of the forest, and bordered by a matted growth of live oak and other evergreens, a circular or oval hollow about sixty yards in diameter, shelved down through sand of perfect whiteness, to its centre, where the spring gushed upward so vigorously as to agitate the surface some fathoms above, filling the entire basin with water of delicious purity and coolness, through the diamond transparency of which were seen fish of different kinds and various colors, which, always refusing a bait, were believed by the Indians to be enchanted or blessed spirits; and under the blaze of a tropical summer, a sensual fancy could hardly have imaged, even in the land of flowers, a more delightful heaven than the bath of the Silver Spring—perhaps the very fountain of rejuvenescence, in search of which the romantic old Spaniard found that immortality in death which he hoped to enjoy in life. There was ample room and verge enough for a little boat, in which visitors amused themselves, floating over the secluded little lake. On a visit, a few weeks since, some officers found the spot deprived of half its beauty and of all its wonted freshness. The silver sands were dry as the desert; the spirit, fish, and the water had vanished; and thickly strewn in the woods around, were the bleaching skeletons and withering carcasses of horses, deer, wild cows, and a variety of other animals, which had perished of thirst. The dry basin somewhat resembled the crater of a volcano, for though there was not a drop of moisture, the boiling motion was kept up in the sand, and on thrusting down the foot or a stick, the gas escaped in puffs distinctly audible."—*Athenaeum.*

Wooden Percussion Plugs.—Captain Norton lately proved, in presence of a Select Committee of Artillery Officers, at Woolwich, the efficiency of his wooden plugs for producing ignition with percussion powder, by inserting them in his percussion rifle-shells, 12 of which were fired at a target placed at 100, and 130 yards, and all exploded.—*United Service Journal.*

Importation of Lead.—It appears by a return to an order of the House of Commons, that the total quantity of lead and lead ore imported into the United Kingdom in the year ending January 1840, was 6,439 tons, 1 cwt, 25lb, on which a net duty of £217 13s. 1d. was received. The total amount of British lead and lead ore exported in the same year, was 12,991 tons, 7 cwt. 3qrs. 11lb. of foreign pig lead, and a small quantity (under two tons) of foreign white lead were exported.

Holborn Bridge.—At the north end of Farringdon-street, at about six feet below the surface of the roadway, the arch and part of the parapet of Holborn Bridge have been uncovered by workmen, employed in preparing for the new line of road in the direction of Islington. The bridge is seen as it stood previous to the Snow-hill improvement in 1802, when the activities of Holborn-hill and Snow-hill were reduced.

Operations against the Wreck of the Royal George, and proposed Great Explosion.—The mud accumulated in the hold of the wreck having proved troub-

somes to the divers, a number of small charges of 47 lb. and of 260 lb. of gunpowder have been fired against the wreck within the last fortnight, and the removal of the fragments has proceeded with great activity; but it now appears necessary to have recourse to another great explosion of about 2,160 lb. of powder, to be placed in a wooden cylinder made in Chatham dock-yard, which having been coated with waterproof composition, and sunk in 15 fathoms at Spithead, was found to be perfectly water-tight. Colonel Pasley has declared his intention of firing this great charge at about a-quarter before two o'clock on the afternoon of Monday next, the 22d inst., when the neap tides and long slack water will favor the operation. Red flags will be hoisted on board the Success frigate hulk, and the two lumps or mooring lighters at Spithead, several hours before the explosion, on the day above-mentioned. Should a violent gale of wind occasion such a swell as to prevent the operation on the 22d, it will be postponed till the 23d or 24th, and each day of delay will cause the explosion to take place about three-quarters of an hour later than the time before mentioned. Our readers may rely on the accuracy of the above information. If no red flags appear, or if they should be taken down without an explosion, the operation is postponed.—*Times.*

India Flax and Cotton.—Samples of flax grown in British India have been submitted to the East India Government, on the nature and quality of which we hope to report in our next number. It has been stated by the trustee of the London Flax Experimental Society, that this article is peculiarly well suited for production in India, "because it is a cold weather crop and does not interfere with the growth of grain or indigo, and because its preparation involves more human labor than any other staple of trade." He further adds, "It is of vast importance that we should be supplied with flax from our own possessions, as we now draw two-thirds of our consumption from Russia, and pay upwards of three millions in cash for it; and because the importation from India of the flax we consume, would advance the main stay of our national greatness by giving employment to one hundred thousand tons of shipping." We have noticed in another part of the paper, that the Honorable Court of Directors of the East India Company, has sent out a number of practical American cotton planters to India accompanied with implements and seed, with a view to commence an experiment for raising good cotton there, on a scale commensurate with the vital importance of that material; for, on the undisturbed supply of cotton, our commercial ascendancy hinges, and the daily bread of millions of the people depends. The golden days of India, instead of being past, as it is the fashion to say, are only beginning to dawn; for her commerce and agriculture are in their infancy, and the most important sources of wealth she possesses have yet to be developed by European capital, which alone can bring them to light.—"Indian News," No. 1."

Steam-Packet Explosion.—A few days since, the X. L. steam-packet, plying between Boston and Lincoln, exploded, thereby causing the death of two men of the names of Robson and Hancock. None of the passengers received any injury. Verdict—"The jury are unanimously of opinion, that the death of the men was accidental, caused by the insufficient staying of the back plate of the smoke-box to the further end of the boiler, by which the only confining bolt was drawn through the plate, allowing the escape of water and steam through the flues and fire place into the stoke hole, they being there at the time. Deodand on the packet £25 on each body."

Cleaning Bottles with Shot.—Mr J. Murray has addressed a letter to the editor of the *Midland Counties Herald*, calling attention to the common but dangerous practice of cleansing bottles with shot. From this letter we extract the pith, which is as follows:—"It is not generally known that shot is a compound of lead and arsenic, and where there obtains the slightest

tendency to acidity, two virulent poisons are held in solution. But apart from the elaboration of acetic acid, the carbonic acid, invariably present, and to which fermented liquids owe their briskness and effervescence, will form two baneful poisons with these metals. I am induced to trouble you with these remarks, having been poisoned on two former occasions from this source; and at this moment I have a pint bottle of ale with ten shots adhering to the bottom within. The remedy is an easy one:—Let the pyrope, or 'Bohemian garnet,' a very inexpensive substance, say 2d. an ounce, be substituted, and I am quite sure bottles may be much more effectually cleaned than by the destructive method now practised, and by which illness and death may be superinduced."

"The last arrivals from Italy," says the *Gazette de France*, "bring the most incredible report that the Laocoön and the Apollo Belvidere have been sold by the Pope to the Emperor of Russia for 9,000,000 fr., and that the whole of the Ducal gallery of Lucca, with its Raphaels, three Carraccis, Francias, Fra Bartholomeos, Barrochios, Domenichinos, Poussins, Guerchinos, and other splendid paintings, are on ship-board, bound for London, to be sold, with the exception of one Raphael, one Poussin and one Francis, which will come to Paris."

Vitality of the Toad.—A naturalist in Iceland has lately made a curious experiment on the vitality of the toad. He caused several of these animals to be so completely frozen, that all the interstices of the muscles were filled with granules of ice without breaking it. By the application of a carefully graduated heat to the body, the toads in a short time resumed all the functions of life.

Narigation of the Red Sea.—In the 73rd number of the *Bulletin de la Société de Géographie*, we find the following remarks on the Navigation of the Red Sea:—"It has been frequently asserted that the Red Sea is too stormy to abound either in shells or marine plants. Often, too, has its navigation been compared to that of the Black Sea, in which many vessels are, every year, lost. None of these remarks, however, are just:—for naturalists find a rich harvest of such treasures on its shores. M. Lefebvre confirms the opinion of Lieutenant Wellsted; and affirms positively that it may be navigated in all seasons, without danger from its double line of reefs, which often facilitate the navigation by forming sheltered coves, where anchorage may be obtained. Cosseir, Geddal, the Archipelago of Dhalac, and the roadstead of Massowah, have already enriched the French explorers, with scientific treasures."

The New Steam Carriage.—The *Brighton Gazette* gives the following description of the carriage:—In appearance this vehicle is something like a gentleman's open carriage, but of larger dimensions; it is elegantly painted and fitted up, and is altogether far superior in appearance to Hancock's carriage, which was exhibited in Brighton some years ago.—The boiler and machinery are placed behind, in a sort of second carriage; and the machinery is almost entirely concealed. When in motion, no smoke or steam is visible; and a small portion only of steam issues from the boiler, when the vehicle is standing still. The carriage is propelled by a condensing engine, which accounts for the non-appearance of steam, and also for the absence of the thumping noise, which is heard from high-pressure engines, such as those used on railroads. The hind wheels are very large, and do not seem at all affected by the irregularities of the surface of the road, passing over stones with a noiseless and even motion, and either forcing them down or crushing them to pieces on the surface. A seat is placed in front for the conductor, who guides the ponderous vehicle by means of a horizontal wheel resembling the wheel of a ship, with the greatest facility. Flys and other vehicles were passed, the coach threading between them with apparently greater ease than a horse is governed by means of the reins. The machinery for checking the progress of the carriage or stoppage, appeared to be

also equally under the conductor. It consisted of a couple of breaks of the small wheels in front, worked by treadles placed under the conductor's feet; and there were also breaks to the large wheels brought into play by means of screws in the back part of the vehicle.

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING JUNE 22, 1840.

Monday.	R. Geographical Society.....	9 P. M.
Tuesday.	R. Medico-Chirurgical Society.	8½ P. M.
	Instit. of Civil Engineers.....	8 P. M.
	Zoological Society.....	8½ P. M.
Wednesday.	Medico-Botanical Society.....	8 P. M.
	Microscopical Society.....	8 P. M.
Thursday.	Royal Society of Literature.....	4 P. M.
	Numismatic Society	7 P. M.
Saturday.	Mathematical Society	8 P. M.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL GEOGRAPHICAL SOCIETY.

June 8th. G. B. Greenough, Esq., President, in the Chair.

The secretary announced a variety of donations, comprising 37 sheets of maps of Illyria and Styria, from M. Lowenstein, of Vienna; some Danish surveys, and a variety of publications were likewise announced, from the Danish Academy of Sciences, Professor Muller, of Leyden, &c., &c. Mr. Williamson, of Pall-mall, presented a clock. A letter was read from Sir John Franklin, dated Feb. 21, 1840, giving some account of the second voyage of Messrs. D'Urville and Jacquetos, in the Antarctic regions. Between latitude 66° and 67°, they had discovered land, which they had traced for 150 miles, covered with frozen snow and ice, and without any appearance of vegetation, and the ships were in great danger from the ice. They had arrived at the conclusion that the position of the Antarctic magnetic pole was in latitude 71° south, and 133° east longitude. Captain Washington stated that no notice of these discoveries had been received at the Admiralty, and an account only had been communicated to Lloyd's. Sir John Franklin also stated that to Mr. Robinson's catalogue of the vocabulary of the Aborigines of Van Diemen's Land would be added that of Port Philip. Lieutenant Woods, of the Indian navy, communicated some interesting particulars of his first survey of the upper part of the Indus. The meeting then adjourned.

(The Morning Chronicle states, that Mr. Enderby has fitted out an expedition for the purpose of exploring the Antarctic regions. France and the United States have recently sent out ships of discovery to the same latitudes; and it is believed that Capt. D'Urville, the Commander of the French expedition, has discovered an island to the southward of Van Diemen's Land. The expedition of which Mr. Enderby is the promoter, will entail no expense on the English Government, while it will carry out all the views which Government entertained when Capt. Ross was sent out. The officer to whom Mr. Enderby's expedition has been entrusted, is Capt. Mapleton, a fellow voyager with Capt. Ross.)

It is confidently to be expected that the projectors of this voyage, will (in the present state of science) ensure the services of scientific and well-informed naturalists.

ROYAL INSTITUTION.

May 29th. Friday Evening Meeting.

Mr. Brockdon delivered a lecture "On some new Applications of Caoutchouc." It is generally

known, that this gentleman has for many years past paid considerable attention to the application of India-rubber, in its various forms for the purposes of manufacture. In the lecture which he delivered this evening, he briefly, and in a very interesting manner, detailed the advantages and uses of this important article of commerce, for the manufacture of an article for stopping bottles, possessing many advantages over corks; and which can be supplied in the market at half the price.

He commenced by stating, that the novelty of the application was only based upon its peculiar and decided advantages—his own experience having led him to consider its practicability. He was first attracted to investigate the subject from having read in Humboldt's narrative, that the natives, where the caoutchouc tree is found, invariably used it for the closing of bottles and other utensils; one peculiar advantage being, that it is not decomposed after preparation even in these low latitudes. His experiments were first made with the pure rubber: he afterwards found that the root rubber which is the most impure, and is of a white color, having a most offensive smell, answered the purpose effectually, and could be obtained at three half-pence the pound, it being unfit for the purposes to which the article in its purer state is applied. In order to obtain the rubber in sheets for the purpose required, Mr. B. placed a knife a little oblique to the axis of motion, and caused the rubber to revolve on the edge of the knife—he was gratified to find his expectations realised upon making the experiment. This process did not answer to the best of his wishes; he then thought he might apply it when in a fluid form, to cover the material hereafter to be noticed. Upon testing the juice of the India-rubber, he found it contained 40 per cent. of the solid material; a small quantity was imported, and it answered perfectly. An arrangement was then entered into to import the fluid in casks, but this altogether failed, the rubber being deposited in large masses from the juice during the journey. Before, however, the sealing of the patent, Mr. Macintosh, an American, devised the means of rolling it out into very thin sheets. This article was then soaked in nitrate of Bismuth, which entirely removes its greasy feel, and renders it entirely unfit for Mr. Brockedon's purpose. To procure the sheets of rubber, another process was employed; common rubber was placed in an iron cylindrical box, and kneaded by a revolving axis. Through this machine a stream of water passed, carrying with it all the impurities. If allowed to proceed to a greater extent than is requisite, the rubber becomes black, and smells like ginger-bread; and if carried still farther, it carbonises, and becomes completely rotten when manufactured into sheets; in fact it may be ultimately converted into a mass resembling black mud. A very peculiar property resides in rubber, viz., that of its changing its temperature with the change of specific gravity, as illustrated by suddenly extending a piece of india rubber, and applying it to the chin or other sensitive part.

To form the stoppers, the wool is shaped into the requisite form, covered with thin sheet rubber, it having first been dipped or coated with a solution of caoutchouc in naphtha: the two cut surfaces of the sheet adhere by the peculiar property inherent in the material, of uniting when fresh cut surfaces are applied; the rubber is applied when slightly on the stretch. The advantages of the sheet rubber were spoken of as an article in common use in domestic affairs; viz., in the place of bladders for covering preserves, &c. It may be purchased at less than the cost of the material ordinarily employed, and is neither of animal texture nor dirty; and answers the purpose much more effectually, preventing, if properly applied, the ingress of air to the preserves.

With respect to the wool, the thickest that could be obtained was the felt used for stopping horse-shoes, which is limited as to length. Mr. Brockedon found that a manufacturer had made a wool rope for machinery, which he thought, when cut up into pieces, would answer his purpose. In making

the stoppers he had two objects in view, one to stop decanters (of a conical shape), and the other as a substitute for corks. In order to lubricate the rope efficiently, it was made to pass through the neck of a funnel filled with solution of caoutchouc; by this means it is evenly coated. After this process, it is cut into pieces of the requisite length and covered with the fine sheet rubber; the cut ends are then smeared with the solution, and small circular pieces of the sheet material applied by boys. When stopping bottles with these stoppers, if the air is not allowed to pass out of the part of the bottle above the fluid, the placing in of the stopper, (owing to the air being compressed and the elasticity of the material) causes it to spring out; to avoid this inconvenience, Mr. B. places at the time the stopper is introduced, a small grooved instrument (canula), which allows the compressed air to escape, when the canula may be withdrawn and the stopper remains permanently fixed.

The proportion of the solution employed is four to one of the solvent. Mr. B. alluded to the great improvement which Mr. Maughan had made with regard to the naphtha from coal tar; with this naphtha, he can lubricate the articles, and in six hours the whole of the offensive odor will be dissipated, which with the old preparation took at least six weeks. With Mr. M.'s naphtha, the hands may be washed, and in five minutes all the smell is gone.

A very great advantage in the stoppers so constructed is, that they are not acted on by alcohol or the vegetable acids; they are only affected by resinous solvents and mineral acids. They are now nearly universally employed for scent bottles, ink bottles, toilet cases, and for protecting the artist's colors from exposure to the air, for those who value the purity of their pigments. They are free from the attacks of insects, beetles, &c., and may be very advantageously employed for stopping wine and beer bottles, and are supplied in the market at less than half the price; viz., 2s. or 2s. 6d. per gross.

Mr. B. exhibited a magnificent specimen of sheet rubber from a manufacturer at Warsaw, which he imagines is formed by allowing the soft rubber to be placed on sheets of glass, and afterwards rolled—a piece was exhibited more than a yard square.

What he pays six shillings per pound for, from the manufacturers, he can obtain by his process for 1s. 6d., to accomplish which end the common Para rubber bottles are cut up, which may be obtained for 1s. a pound, the better quality at 2s., if this material be made to pass through his masticator, it in 12 hours is capable of being manufactured into sheets. But if Assam rubber be employed, which may be obtained for threepence per pound, together with Maughan's oil, the same quantity may be procured for ninepence.

Mr. Faraday called the attention of the audience to a new application of soldering. The workmen attended with the apparatus and efficiently exhibited the process. It simply consists of using a jet of hydrogen gas, mixed with a certain proportion of atmospheric air, and placing the lighted jet to the surfaces of the lead which it is the object to solder; common lead is fused between the portions to be joined, and thus supplies the place of solder, and forms a neat and most efficient joint, the hydrogen acting the part of a reducer. A Wolfe's apparatus was exhibited, the portions soldered together by this means—it was first noticed by Priestley.

On the library table, we observed specimens of autogenous soldering from Mr. Delbrink; meteoric iron from Zacatus, with a mechanical fractured surface, and also with surfaces dissected by acids from Mr. Parkinson; a beautiful specimen of rock-salt from Mr. Hemming; specimens of fossil wood from Van Diemen's Land; salts, sheet, rope, &c., from Mr. Brockedon.

A lecture on magnetism by Rev. Dr. Scoresby was announced for the following Friday evening meeting.

SOUTHERN AFRICA.—DR. KRAUSS'S RETURN.

We have much pleasure in stating, that Dr. Ferdinand Krauss of Stuttgart has just returned

from his expedition into the interior of Southern Africa. It will be remembered that this indefatigable naturalist and traveller left England about two years and a half since, with a view to examine some of the central parts of Africa, and to collect various objects of natural history, and has sojourned principally at Natal and Amazooland, (the latter place receiving its name from a powerful tribe of Kafirs). We understand he has brought with him a very considerable collection of animals, including mammals, birds, fishes, &c., together with a very extensive series of the invertebrate classes, comprising insects, shells, crustaceans, and zoophytes. In addition to the valuable zoological collection, Dr. Krauss has collected and dried about 3,000 species of native plants, and, in most instances, 50 specimens of each species, which the Botanists of Europe have now an opportunity of purchasing for examination, the specimens having been collected and preserved with the greatest care. We are at all times pleased to hear of private individuals bestowing their time and money, for the advancement of the many interesting sciences which natural history embraces; and when we consider the many and deplorable hardships this traveller has undergone, exposed to the severity of the climate, &c., independent of the many perilous situations in which we understand he has been frequently placed, not only from the ferocious animals, but likewise with the uncivilised and barbarous natives; we cannot but hail the return of such an enterprising scientific gentleman as Dr. Krauss with the kindest welcome. We hope shortly to be able to give a brief account of some of Dr. K.'s discoveries in those regions; including especially the zoological examination of the coal districts in the interior of that little known country. The British Museum have purchased a series of his collections.

PUBLIC COMPANIES.

In accordance with the intimation in a former number, of our intention to give an occasional notice of Public Companies, we this week return to the subject. Among others which have been brought under our notice, are two deserving especial mention, viz., the "Patent Rolling and Compressing Iron Company," and the "English Steel-Iron and Anthracite Company."

ENGLISH STEEL-IRON, AND ANTHRACITE COMPANY.

So many unsuccessful attempts have been made, during the last half century, to produce good shear and cast steel from English iron, that further experiments seemed for a time to have been altogether abandoned; indeed, the removal of the difficulties have been considered almost impossible. We are happy however to find that the spirit of enterprise has revived, and that every obstacle has at last been surmounted. Our country will now receive an important addition to its sources of wealth and prosperity, in an unlimited supply of that essential article of civilisation—steel.

A perusal of the Prospectus, which we have this day inserted in our advertising columns, will go far to satisfy our readers that they have now an opportunity of investment, likely to be no less beneficial to the pecuniary interests of the shareholders, than to the general interests of the public at large. We are of opinion, that the proposed plan of remuneration for the patents, after the shareholders shall have received five per cent. interest on their capital, is an arrangement which, while it shows an honesty of purpose, at the same time gives evidence of a confidence of success, which cannot fail to inspire a corresponding feeling in the minds of all those who may embark in the concern. The names of the directors are vouchers for their high respectability, and present that combination of practical and scientific knowledge, best qualified

for the successful management of so important an undertaking.

We observe that a decided preference is given to anthracite pig-iron; for, though we understand, and we do not wonder at it, that Staffordshire metal has hitherto been chiefly employed for the purposes of this invention, yet we readily believe that iron smelted with anthracite coal must be more suitable than any other for the patent process; being purer, and therefore requiring a less degree of chemical action and manipulation, to remove extraneous ingredients. The long-neglected, though most valuable description of fuel, anthracite, appears at last to have attracted that attention which its superiority for a variety of purposes ought long since to have commanded. An interesting article on the subject appeared in our worthy contemporary the *Mining Journal*, of last week, which renders it unnecessary for us to do more than allude to it here.

The public, we believe, are now fully alive to the value of a native mineral, from the working of which, it appears, larger sums are likely to be de-

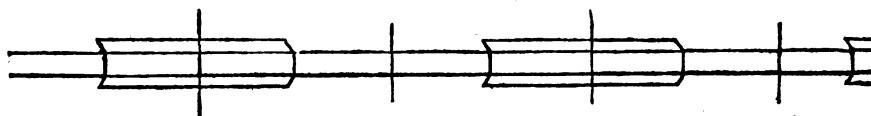
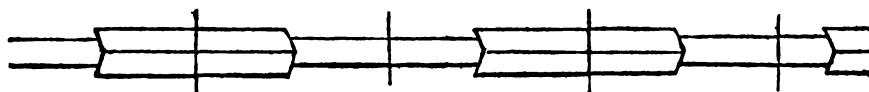
rived, than our countrymen realised from their speculations in the gold and silver mines of Mexico or Peru.

PATENT ROLLING AND COMPRESSING IRON COMPANY.

From the advantages held forth by the Prospectus of this company, we have taken advantage of the invitation contained therein, and have minutely inspected several of the various articles manufactured by the process.

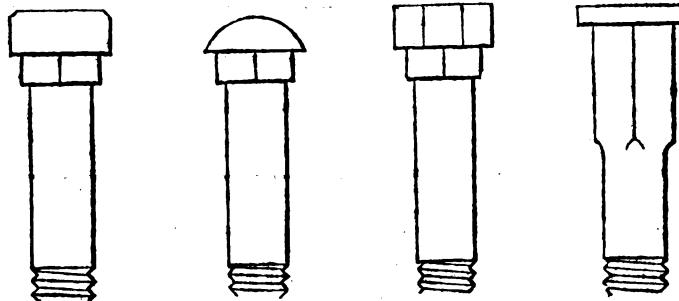
The rolled iron in bars, alternately round and square, is unique and perfect in every respect; and, for engineering purposes, will be highly prized. It is not, however, confined to round and square only; any other angle, or number of angles, may be formed on the same bar—and these of necessity will be true, and of equal diameter, as appertaining to their different parts.

The annexed Engraving, shows the iron rolled in two forms:—



This being cut into lengths, as indicated by the intersecting lines, forms the shaft of a bolt or rivet, with a square shoulder, and a surplus of iron in every way adequate to form the head,

which, by one heating of the iron, is completed in any form required, upon being placed under the die formed to receive them.



From the perfect state in which the machinery appears to be arranged, there can be little or no excess of material, and the pin, bolt, or rivet, thus made, is preferable to any that could be manufactured by hand, as there is no welding. In fact, it is completed out of the mass, and that by only one process of heating—the quality of the material being thereby preserved; whereas by the ordinary process, a similar article would require several applications to the furnace; which, consequently, must deteriorate its quality, and render it liable to fracture.

Another great desideratum is attained by this mode,—the head must necessarily be square on the shaft; the bearing being therefore equal, the strength must be greater.

The railway pins or spikes are certainly a very complete article of manufacture, and bid fair to supersede those generally in use. Attempts have heretofore been made to manufacture them by machinery process, but have not been found to answer, from the circumstance of the heads breaking off in driving: this has been caused, it would appear, by the pins having had to be immersed in water in their heated state, to cause a condensation sufficient to detach them from the die; whereas, by this process, they relieve themselves and gradually cool.

The certificates from various contractors on the different railroads, are highly satisfactory on this point—the per centage of breakage not being worth calculation, varying only from one in 500 pins to not more than three or four pins in 40 tons.

The advantage that machinery gains over labor is herein sufficiently exemplified; and if the proposed undertaking be followed up with spirit, the directors, we should say, would derive a large return for their invested capital.

THE THEATRES.

"See that the players be well used."—*Hamlet*.
"Nothing extenuate, nor ought set down in malice."—*Othello*.

HER MAJESTY'S THEATRE.—On Saturday night, owing to the sudden indisposition of PESARANI, the performances, which were to have been the same as on Thursday, were necessarily changed, and the opera *Il Barbiere di Siviglia* was substituted. The house presented a magnificent aspect; a finer or more exhilarating sight we do not remember ever having witnessed at any other theatre.

The great attraction lay in the expectation that Her Majesty and Prince Albert would grace the

house with their presence; accordingly, when they appeared in the Royal Box, they were greeted with a universal burst of the most deafening cheers, accompanied with the waving of hats and handkerchiefs, which did not cease until the whole operatic corps came forward and gave the national anthem. The opera went off with great *clat*, and the evening's entertainments closed with a choreographic selection from *La Gitana*, in which TAGLIONI and CEARRO were successively brought in contact. TAGLIONI, when she first entered, did not elicit her usual mood of applause, but CEARRO, who succeeded her in a pas with GUERRA, drew forth loud plaudits, accompanied with a shower of bouquets.

PRINCE'S THEATRE.—An opera was on Wednesday night brought forward, for the first time in London, by the German Opera Company, called *The Templar and the Jewess*, the plot of which is based on Sir Walter Scott's novel of "Ivanhoe." The characters represented are—*Wilfred of Ivanhoe*, *Brian de Bois Guilbert*, *Friar Tuck*, *Cedric*, *Lucas de Beau-manor*, the *Black Knight* (*Cœur de Lion*), *Isaac*, *Rebecca*, his daughter, and the *Lady Rowena*, with other personages of the novel, whose names need not be enumerated here. The composer, MARSCHNER, was both a friend and pupil of WEBER's; indeed the whole opera throughout, is deeply imbued with something of the spirit and style of that great composer. It is a composition of a very high order, and many selections might be made, that would bear comparison with anything that the German school has yet produced.

It is full of instrumental beauties, but the gem of the whole opera is the opening chorus of the second act, which is replete with exquisite beauty and pathos. We feel fully justified in repeating what we have so often said, that the choruses, as given by this company, will for ever distinguish them from the tame and insipid performances of a similar nature elsewhere.

We must favorably notice the song sung by *Wamba*, the court jester, and the battle chorus, that immediately followed. These, as compositions, are striking, forcible, and harmonious. Herr FÖRCK performed the character of *Friar Tuck* with excellent point, and a lively perception of that worthy's peculiarities.

Several scenes might, without detriment to the opera, be considerably curtailed. Mad. Fischer SCHWARZBACH, SCHMEZER, EIKS, and FÖRCK, have created fresh claims on public approbation, by their correct and spirited performance of a class of music, never easy, and frequently overloaded with difficulties. The house was well attended; we recognised among the company, the Duke of BAVARIA and a number of other fashionables.

COVENT GARDEN.—On Monday next, this establishment will re-open, for one evening; the performances being for the benefit of Mr. NOTTER, the worthy box-book keeper. This gentleman having retained his situation at Covent Garden for 17 years, has so completely identified himself with the public, that we need only announce the occasion of his benefit, to enlist their best energies in his behalf. The vile treatment he received at the hands of the late lessees of this theatre, was such as to render his resignation of office imperative; by this step, his fortunes necessarily became impaired, and a public subscription was set on foot, to which his friends and the public contributed largely. He is now about to take his annual benefit, and we trust that it will be a "bumper." The "English Opera Company" have volunteered their services on the occasion; so also has the celebrated Ole BULL. The bill of fare is savory and varied. The public have now an opportunity of doing good to an injured individual, and we hope they will give Mr. NOTTER substantial proofs of their hatred to tyranny.

HAYMARKET.—Charles KEAN's first engagement is nearly at an end, he having only three more nights to play. His attraction, we observe, is already on the wane, and he is by no means a profitable card. There is such a sameness in the performances, that we have nothing new to record, excepting a patched-up farce called *A Kiss in the Dark*, from the French,

said to be done by BUCKSTONE. It is a very old friend with a newly painted face,—black, which black comes off on a face that is white, and “tells tales.” By this, a jealous husband discovers that a strange man has been kissing his wife. He fumes, he rages, he swears,—an *éclaircissement* takes place, the wife says she organised the plan to cure her husband of his jealousy, and so all matters are explained and amicably settled!

DRURY LANE.—The *Concerts d'Été*, we are glad to say, are likely to prove a profitable speculation. They have been well attended from the first evening, and continue to increase in popularity. The elegant appearance of the house, the well-attuned orchestra, and the generally judicious selection of music introduced, have excited universal admiration. We would suggest, however, that there should be fewer pieces of elaborate composition, and more of the short and popular airs, waltzes, galops, &c. The multitude appreciate lively music far beyond that of a more studied and intellectual character. The solo performers are entitled to our best word,—ELIASON, JULLIEN, and BAUMANN, more particularly. JULLIEN's variations on the picolo, with obligato accompaniments, is worth walking some miles to hear. This gentleman's perfect good humor, and readiness to honor an *encore*, have stamped him a general favorite.

ENGLISH OPERA.—The ladies and gentlemen who have formed themselves into a commonwealth, and have taken this theatre as a joint speculation, are doing their utmost to secure public patronage; and we sincerely hope their exertions will be crowned with success. The pieces they select, are wisely confined to light and pleasing trifles, calculated to dispel ennui, and prevent their audience from going to sleep. Thus, we have a new version of *Master Thomas Thumb*, with the usual variety of *Noodles*, *Doodles*, and *Huncamucas*; a revival of the *Ladies Club*, (*Mrs. OGER*, a noble chair-woman, in the chair); *The Three Secrets*, a new drama, by *Mark LEMON*; and many other favorite pieces. The company embraces *Mrs. Walter LACY*, *Mrs. OGER*, *Miss COOPER*, *COMPTON*, *T. GREEN*, *BROUGHAM*, *G. WILD*, *TURNOUR*, and other useful actors. We shall be glad to hear that their efforts have been successful, for the theatrical world, just now, is in a most lamentable plight.

THE ITALIAN OPERA IN PARIS.—Hopes are entertained, that the Italians will either occupy the Ventadour (*Renaissance*), at the opening of their season in October, or that the new Salle Favart will be ceded to them by an arrangement with the Opera Comique, which, in that event, would be transferred to the Ventadour. We should much wish to see the latter design carried into effect; for to us it looks like sacrilege to allow any *artistes* to occupy the Place des Italiens but the unrivalled vocalists who so long delighted the public on that spot. At all events, it seems clear that our favorites are not to be again exiled to the Odeon, for we understand Government has ordered a commission to examine the means of restoring the Théâtre Ventadour, with a view of appropriating it to the Italian Opera. *M. Visconti*, the architect, has been instructed to present an estimate of the works.

BRUSSELS.—A new piece, entitled the *Happy Birth*, was brought out at the Park theatre, on Friday night, with great success. The author of this brochure conceived the lucky idea of introducing some patriotic *apropos* relating to the last campaign in Algiers. The names of the Belgian officers who took part in the expedition, were proclaimed, and the announcement was received with genuine enthusiasm. Victor in his part of an Arab soldier, excited many bursts of laughter; his dress and his countenance were perfect. At the fall of the curtain, the audience loudly demanded the name of the author, when *Luguet* came forward, and gave the following reply, in imitation of an *Irish bull*: “Gentlemen, Duprez, a member of our company, wishes to remain anonymous.” This announcement was received with shouts of laughter, followed by loud braves.

ADVERTISEMENTS.

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ONE of the objects of this Company is to extend the application of a discovery of great national importance, secured by Letters Patent for the United Kingdom, by means of which British Iron is manufactured for conversion into Steel of all qualities; for which purpose, Foreign Iron alone had previously been found applicable.

The desideratum has now been attained on a scale of such magnitude, as to remove all doubt of success; large quantities of Steel Iron having been made at the Tividale Iron Works, Staffordshire, during the last four years, and converted into Steel, which has been manufactured into fine cutlery of the best quality, files, tools, and coach springs, such as could be previously obtained only from Russian and Swedish Iron. In support of these facts, numerous testimonials may be seen at the Company's office.

The manufacturing cost of this Iron is so moderate, that, even if sold at prices greatly below those of Swedish and Russian Iron, it still yields a large profit. The article produced, is the staple of one of the most important manufactures in the kingdom, of great and constantly increasing consumption; according to official returns to Parliament, the quantity of Foreign Iron imported, in 1835, was 19,750 tons, and on the average of the last four years, 22,034 tons.

This branch of trade has hitherto been monopolised by the owners of Swedish and Russian Iron Mines, and therefore the discovery of a method to make British Iron fit for conversion into Steel, may be said to be extremely well-timed, now that the vast development of steam conveyance, and the extended application of machinery to every branch of manufacture and industry, are daily creating a fresh demand; while the Patent process is found applicable to the manufacture of many descriptions of iron, for engineering and other purposes, for which a superior quality is required.

The Tividale Iron Works, which are leasehold, with a right of purchase, are admirably situated for the supply of the principal markets, possessing equal facilities for water carriage to London, Bristol, Liverpool, Manchester, Sheffield, and Hull. The present Proprietors now purchase and consume at the rate of 6,000 tons of British Pig Iron per annum; and have established an excellent connection throughout the Kingdom, particularly at Sheffield, the increase of which has compelled them considerably to augment their works, during even the last few months.

The present proprietors purchased the Patents for making Steel Iron for £16,000, and have since, at a great expense, established the practical working of this new manufacture on a scale sufficient to command already an excellent connection. They are to be remunerated only out of the net profits, in the proportion of one-third, after deducting five per cent. per annum interest on capital for the Shareholders, according to an agreement considered highly advantageous to the Company, and in which the Proprietors undertake to continue their services in the management of the practical department so long as required.

The Company thus presents the unusual advantage of commencing operations with a trade already successfully established, in full activity, and susceptible of almost indefinite extension; and in bringing it before the public, the Directors are influenced by their conviction of the great advantages to be secured by an extensive application of capital, in the establishment of Dépôts at Sheffield and elsewhere, so as to push the trade with that activity which the daily increasing demand requires.

Another and an important advantage of this Company is, that the Directors have secured some of the best anthracite properties in Wales, situate upon the line of the Llanelli and Kidwelly Canal, in Carmarthenshire, having only one lock intervening between the principal Mines and the Harbours of Bury-Port and Kidwelly. These properties contain ample resources for carrying on an extensive trade in Coal as well as Iron; and where it is intended to erect blast furnaces, to enable the Company to supply themselves with Anthracite Pig-Iron, which has been found preferable for the Patent purposes.

Applications for shares (if by letter, post paid) to be made to the Directors, at the Company's office, or to the Solicitors, in the annexed Form, when notice of the allotment of the shares will be immediately given to the parties. A deposit of £3 per share must be paid within seven days from the date of the allotment, to Messrs. Ladbrooke, Kingscote, and Co., of Bank Buildings, who will give a receipt for the same, to be afterwards exchanged for shares, on which will be endorsed the principal conditions and regulations of the Company; and of the issue of which, due notice will be given.

After the above deposit of £3 per share, three instalments of £3 each are to be paid on the 15th August, the 15th November, and the 15th February next. No further call will be made until a dividend shall have been declared, and a statement of affairs be submitted to the Shareholders, when actual returns will show how far it may be desirable to extend the Company's operations.

Should the shares not be allotted to the satisfaction of the Directors, the deposit will be returned without any abatement whatever.

Dated London, 2d June, 1840.

FORM OF APPLICATION FOR SHARES.

To the Directors of the “English Steel-Iron and Anthracite Company.”

Gentlemen,

I request to become a Subscriber for Shares of £20 each in this undertaking, and agree to take such Shares as shall be allotted to me, and to pay the deposit thereon of £3 per Share, in conformity with the Prospectus, dated London, the 2d June, 1840.

I am, Gentlemen, &c.

Name and Surname.....

Residence or place of Business.....

Date.....

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MORISON'S PILLS.

NOTICE is hereby given, that the Business of the BRITISH COLLEGE of HEALTH, Hamilton-place, New-road, London, will be carried on as heretofore under the name of “JAMES MORISON THE HYGEIST.” This notice is rendered necessary, in consequence of the numerous imitations of the Medicines.

British College of Health, New-road,

London, June, 1840.

THE SHIPPING AND MERCANTILE GAZETTE.

London Evening Journal of Maritime, Commercial, and Political News,—combining all the essentials of a Daily Newspaper, with the prominent features of complete and exclusive intelligence on every subject connected with the Shipping and Trade of the United Kingdom. The Shipping Gazette has obtained a character for correctness and usefulness unprecedented in the annals of Newspapers. It now commands an extensive circulation throughout the United Kingdom and the Colonies, on the Continent of Europe, in the United States of America, and other foreign countries; and is therefore a most eligible medium for commercial and miscellaneous advertisements, particularly those that relate to the sale, charter, freight, equipment, and sailing of vessels, and the sale of merchandise, and that have for their object the particular attention of Merchants, Ship-Owners, and Mariners, and those having dealings with them. The establishment of the Shipping Gazette forms a new era in the history of Shipping Intelligence; comprising, as it does, daily and complete announcements of the arrival and sailing of all vessels, in the coasting and foreign trades, together with an accurate account of vessels spoken at sea; state of winds and weather; accidents; losses; rates of foreign and coasting freights; premiums of insurance; wholesale prices of goods; stock-exchange news; coal, corn, and other markets; which information is regularly furnished and derived from the most authentic sources at home and in foreign countries trading with Great Britain. The Shipping Gazette further embraces a comprehensive detail of domestic and miscellaneous intelligence; records of all important events; reports of parliamentary proceedings, public meetings, decisions of law and police courts, &c., especially such as refer to nautical and commercial matters; and altogether contains a larger mass of information than is afforded by any other Evening Newspaper. The Shipping Gazette is frequently referred to by witnesses examined before Committees of the House of Commons, as furnishing the most authentic evidence on maritime affairs. Orders, communications, and advertisements for the Shipping and Mercantile Gazette, are received by its Agents at the respective out-ports, and by any News Agent in town or country. Advertisements and communications to the Editor, may be sent to the Publication Office, No. 54, Gracechurch Street, London.

RAILWAY MAGAZINE, AND COMMERCIAL JOURNAL. Railways, Banks, Mines, Steam Navigations, Assurances, Public Works, &c.—This long-established and extensively-circulated Work, which has attained the greatest celebrity for the value of its Articles, and its uniform success in all causes it has advocated, is now published WEEKLY, price 4*½*d. stamped, and consisting of 16 closely and handsomely printed pages. It contains full and accurate Reports of all Railway and other Joint-stock Company Meetings; Steam Navigation; Asphalte; Accounts of New Companies, Banks, Mines, Assurances, Canals, Docks; a most important table to all travellers of the times and fares of all Railway Trains throughout the kingdom; unique and valuable tables of the prices of Railway and other Shares, Paper Money in circulation, Metals, Traffic of Railways, Meetings, Calls and Dividends, General, Mechanical, and Scientific Intelligence. A Tide Table for every day in the Week for each Port frequented by Steam Vessels.

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PATENT ROLLING and COMPRESSING IRON COMPANY, 78, King William-street, city. Capital £125,000, in 5,000 shares of £25 each. Deposit £5 per share.

DIRECTORS.

W. A. Urquhart, Esq. Thomas Hawkes, Esq., M.P.
Sir William Gosset, Royal William Ryton, Esq.
Engineers. W. H. Vardy, Esq.

Bankers—Messrs. Glyn, Halifax, Mills, and Co.
Solicitor—Thomas Hanson Pelle, Esq. Great Winchester Street.

Secretary—Mr. John Atlee.

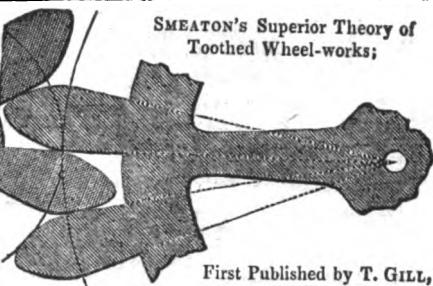
The object of the Company is the working of certain patents obtained and now in force for rolling and compressing iron by machinery, thus producing in an immeasurably shorter time, and at a greatly diminished cost, a variety of articles proved to be very superior to those resulting from manual labor.

The articles to which these patents apply, consist of bolts, rivets, railway pins, and others too numerous to particularise, of which the consumption is unlimited, and which are indispensable in the construction of railways, steam boilers, gasometers, ship building, architectural, and a variety of other very useful purposes.

The patent railway pins have for some time past been used on the railroads throughout England, and their superiority is established not merely by the certificates of some of the first engineers, but practically by the repeated orders of contractors and American agents, (some executed and others in course of execution,) the whole of which may be seen on application to the Secretary, who will show specimens of the article produced, and afford any further information relative to the undertaking generally.

Application for shares to be made to the Secretary, at the Company's offices.

In consequence of the demand for shares from the country having much exceeded the number calculated on, applications cannot be entertained after the 15th inst.



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Mining Journal Office, 12, Gough-square,
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NEW WORK ON THE IRON TRADE.—

The Number of the MINING REVIEW this day published, contains the Fourth Part of the Paper on the IRON TRADE, by Harry Scrivenor, Esq.—this work will be completed in Twelve Monthly Parts, and so arranged as to form a separate volume at the end of the year; in addition to which the MINING REVIEW contains, Suggestions for the Use of the Blowpipe by Working Miners, by John Prideaux, Esq., F.G.S., Cornwall (with illustrations); conclusion of the Inquiry into the Origin and Nature of Tin Bounds, by Frederick Hill, Esq., of Helston; Notice of the Copper Mines of Alten, Norway, by M. de Laroquette (late French consul in that kingdom); Review of the Second Report on the Geological Survey of the Province of New Brunswick, by Abraham Gesner, F.G.S.; Scientific Bodies, &c.—The MINING REVIEW is published at the office, as above, on the 1st of each month, price Sixpence.

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TO INVENTORS AND PATENTEES.

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INVENTORS' AND JOURNAL

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INVENTIONS, TRADE, MANUFACTURES, LITERATURE, AND THE ARTS.

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No. 47.]

SATURDAY, JUNE 27, 1840.

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PROPOSED RAILWAY SYSTEM OF FRANCE.

The French government, impressed with the importance of establishing railway communications between the principal towns of the kingdom, lately brought forward a project of law to that effect, and a commission was appointed to consider by what means it was best to proceed, and to what extent it would be advisable the government should interfere in their construction. The report has been presented, the discussion of it has already begun in the French journals, and has been the subject of animated debate in the Chambers.

One of the first points on which the commission were unanimously agreed, was the absolute necessity that France should remain no longer behind other nations in the formation of railroads, which have now become a part of the general system of communication. The next important question was, to whom the execution of these railways had best be entrusted. The commissioners, in their report, recognise the principle that railroads ought, as much as possible, to be left to private industry; because works so undertaken are done quicker and at less expense. But in the existing state of things, whilst private trade and speculation are languishing, and the spirit of association, which is its natural support, is also depressed, and capitalists seem to shun all enterprises that are new to them,—it being, therefore, impossible in this state of distress to trust to private speculation alone for the construction of the extensive lines of railway that are projected—it becomes necessary to assist their formation by the aid of the government. The mode of rendering this assistance, and its extent, were considered by the commissioners in different forms, and four methods are announced as practicable, viz., by a loan, by taking shares, by pecuniary aid, and by a guarantee of interest. On these different plans, the *Commerce* makes the following remarks:—

"The plan of a loan, as M. de Beaumont rightly

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says, is the kind of assistance best suited to the state. In fact, the state runs, in this case, really no risk, since nothing is expended without having security of greater amount than the money lent. This plan has been adopted with success in England,* and has been applied in France to the railroads from Alais to Beaucaire, and from Paris to Versailles. But if this plan be efficacious in certain cases, either where an undertaking is left unfinished for want of funds, or when it experiences in its commencement too many difficulties to be otherwise overcome, it is insufficient in many other cases that require more powerful assistance.

"The taking of shares is adopted in the United States, and is about to be practised by the Belgian government, which has subscribed for a great number of shares in the railroad from Liege to Cologne. We might be induced, at the first view, to approve of this means of uniting in enterprises of public utility the power of the government with the strength of individual association,—the genius and activity of private industry with the foresight of the administration,—but, on reflection, many inconveniences present themselves to this plan. The state ought not to interfere much in speculative operations, and the companies themselves might be cramped in their energies by the dependence in which it would place them; in short, this mode of co-operation would offer scarcely sufficient attraction for capitalists. To remove this difficulty, the government has proposed to give the shareholders the right of precedence in the payment of interest on their capital, and of afterwards taking a proportionally greater share of the dividends obtained. But would not this be to throw too much of the burden on the state? Let us add, too, that all these conditions do not secure the completion of the undertaking, and after the sacrifice of the shares of the state, the works might be suspended.

"If we discard the third plan, of pecuniary aid, which can only be supported by speculators, and has in truth no serious advocates, we come to the last method proposed, the guarantee of minimum of interest. According to this plan, the state would guarantee to the companies an interest of 3 per cent., and a sinking fund (amortissement) of 1 per cent. for 46 years. If we examine this system, with a view to its advantage to the state, we shall at once perceive that it only imposes an eventual engagement, which will not come into operation until, and on condition of, the completion of the works; and if the encouragement of such undertakings be confined to those that have a reasonable prospect of success, the responsibility of the engagement be-

comes merely nominal. In respect to the interests of the companies, this plan renders their success more secure than any other. The shareholders being certain of receiving a small interest for their money, will be willing to run the risk for the sake of the great probable advantages, if it become profitable. It is objected, indeed, to this plan, that private industry being thus guaranteed against all risks will lose its principal incentive to activity. That, however, need not be feared, for an interest of only 3 per cent. is not enough to produce inactivity, and there is no capitalist, either great or small, who would engage in such an undertaking, who would be satisfied with so little.

"Thus we see that of the different means proposed, there are only two which appear to us to be advisable—the plan of granting a loan, and the guarantee of a minimum of interest. These are the two that the commissioners have preferred; and they propose for the railroad from Rouen to Andrezieux, that a loan, on the usual conditions, should be granted; for the railroad from Basle to Strasburgh, a loan, the interest of which shall not be paid to the state until the shareholders have received four per cent. on their paid-up capital; for the railroad from Paris to Orleans, the guarantee of a minimum of interest of 3 per cent., and a sinking fund of 1 per cent. for 46 years. The loan of four millions to the company from Rouen to Andrezieux need not meet with serious opposition. To protect the rights of the state, the project of law proposes that the railroad itself shall be security for the money, even in preference of the former creditors, whose claims amount to two millions.

"The commission has substituted the plan of a loan for that of taking shares for the railroad from Basle to Strasburgh. This alteration, however, produces but little change in the first project, since the company will, in either case, have the command of twelve millions six hundred francs, which is the sum required. But we are of opinion that, as the commission had adopted the principle of guaranteeing a minimum of interest in the railroad from Paris to Orleans, it might, with equal propriety, have applied it to the company from Basle to Strasburgh.

"The guarantee of interest accorded to the railroad from Paris to Orleans, is the first step in a system that will have ample results, and we doubt not this mode of support will exert great influence on the future undertakings of great public works. This guarantee of interest will only apply to the company's funds. If the company is obliged to have recourse to loans, the interest of these loans will be considered as forming part of the expenses of the railroad.

"It has been often alleged against the system of

* Not in reference to Railways.

guaranteeing interest, that it subjects the state to eventual charges, without offering the chance of recovering the sums that may have been paid. The commission has answered this objection by stipulating that, in case the profits of the undertaking amount to 4 per cent., the surplus of the profits shall be reserved, to indemnify the state for the charges that may have been previously incurred.

"It now remains to say a few words about the three railroads of which the government undertakes the sole execution. The most considerable is that from Nismes to Montpellier, which will be upwards of thirteen leagues long, and the expense estimated at fourteen millions of francs. It appears to us that it would be better to defer the execution of this railroad. It will doubtless be of great service; it will connect two towns whose total population amounts to 80,000; it will connect two railways, either already constructed, or in progress; but, nevertheless, its formation is not a matter of immediate moment, and companies might afterwards be formed to execute it with the support of the state. The execution by the state of the two short railroads that will place Lisle and Valenciennes in communication with the Belgian frontier is not open to the same objections. These roads by being at first in the hands of the government, it will be able to regulate more effectually the new arrangements for the customs and police regulations that these new modes of communication will render necessary. Besides, it is understood that the execution of these two lines by the state, is not to prejudice the mode of execution that is to be adopted for the great line of railway from Paris to the Belgian frontier."

The plan originally proposed by the French government, was to assist the formation of railways by the taking of shares. This plan, however, is the one least approved of by the commission; and it is understood that the French ministers have been induced to alter their original views, and to support those recommended by the commissioners' report. Some of the French journals object to the establishment of different systems, and recommend the adherence in all cases to the principle that is considered to be the best.

PREPARATION OF WOOD FOR DIFFERENT PURPOSES.

We recently gave an account of an important discovery by M. A. Boucherie, for the preservation of wood from decomposition, by steeping the trunks of trees, when freshly cut, into a solution of pyrolignous acid. It was stated at the same time that, taking advantage of the action of the remaining vitality of trees in absorbing liquids, M. Boucherie had applied the discovery to many other purposes besides that of preserving wood from decay, among which was giving it increased and enduring elasticity, rendering it incombusstible, &c. The following is a description of the processes by which these different results are obtained.

TO GIVE FLEXIBILITY AND ELASTICITY TO WOODS.

Although in a great many cases the organisational constitution of woods, and even in certain circumstances their chemical compositions, may help to preserve their suppleness and elasticity; yet these properties are usually owing to the quantity of moisture that the wood retains. M. Boucherie, therefore, particularly directed his attention to the means of retaining this requisite moisture within the wood. He says he has completely attained his object by solutions of deliquescent salts, introduced into the fibres by the means of natural absorption. The action of these salts, he states, is not confined to retaining the moisture within the wood; they

appear also to operate in the manner of oily substances, and produce a degree of suppleness in the wood, even greater than existed at the time the timber was cut.

After many different attempts, M. Boucherie found that the mother-waters of salts, which are formed principally of deliquescent chlorides, serve very well for this purpose; and he thus renders valuable a substance that is at present of no use. It must be observed, that in order to obtain the maximum effect, it is requisite that the solutions of salts be very concentrated. Although the impregnation of the wood with these deliquescent salts, M. B. thinks, would be alone sufficient to preserve the wood from decay, he recommends, as additional security, that a fifth part of the coarse pyrolignite of iron should be mixed with them.

TO PREVENT WOOD FROM SHRINKING.

The present method adopted to prevent wood from warping is to make it as dry as possible, but the attempts hitherto made to hasten the process, which takes a long time when left to itself, has not been very successful. No one has yet considered whether this state of dryness is in fact the only condition that can prevent wood from shrinking. M. Boucherie, however, was of opinion that the change in volume might be attributed to the substances contained in the fibres of the wood, which from time to time either attract moisture from the air, or part with it. He thought, therefore, that if he could keep these natural sponges constantly saturated with water, their size and that of the whole mass, would remain constant. To try this experiment, he employed the natural absorbing powers of the wood to impregnate the fibres with deliquescent salts, and the experiments, it is stated, have completely answered.

TO DIMINISH THE COMBUSTIBILITY OF WOOD USED IN BUILDING.

This effect is produced, as in the two preceding cases, by impregnating the fibres of the wood, by natural absorption, with strong solutions of deliquescent salts, by which means they are constantly kept in a state of moisture.

TO COLOR DIFFERENT WOODS.

The method of coloring wood by M. Boucherie's process, is by using either metallic or vegetable substances. In the first case, the solutions into which the tree is plunged are not colored; but they are solutions of those substances which by their reciprocal decomposition form a colored body, and the absorbing power of the tree is brought successively into action on the two liquids. Thus a blue color is obtained by plunging the tree successively into a solution of a salt of iron, and of prussiate of potash. Vegetable coloring matters, M. Boucherie has observed, do not penetrate the fibres of the wood with the same facility as mineral solutions. Some woods, indeed, reject them altogether, however diluted the colored solution may be.

The operation of impregnation ought to be performed whilst the trees are standing; for the transverse cutting, by means of which the vessels containing the sap are brought in connection with the solution that it is intended they should absorb, may be so contrived that two opposite points may be left sufficient to support the trunk in its vertical position. This mode of operation diminishes the expense, and renders the impregnation more rapid, and is the method which M. Boucherie prefers in all cases where it is practicable. When the tree has been completely separated from its roots, the force of suction diminishes from the moment that it is cut down; but after two days, or even more, the impregnation may be effected.

The force of suction in trees, varies according to the season of the year; but the variation does not obtain in all trees to the same degree. In general, however, it is most powerful in autumn. The quantities of different fluids that a tree will absorb

are very considerable; but the absorption of neutral solutions is much more abundant than those of acids or alkalies. The penetration, it must be observed, is never complete. In soft wood, there is always a central tube of variable diameter which resists the impregnation. In hard wood, the central parts of what is called the *heart* of the tree remained unchanged. There are differences in this respect even in the same species, partly owing to difference of age, but which may be also ascribed to other causes, not yet clearly ascertained.

M. Boucherie having found that the autumn is most favorable for the impregnation, is of opinion that that season of the year would also be most proper for felling timber, which is not intended to undergo any preserving process. Trees are commonly cut down in winter, under the impression that having at that time less sap in their pores, they will dry more quickly and completely. M. Boucherie considers this practice to be bad. He has found, in fact, that when the sap vessels, divided by the cutting instrument, are not placed in connection with any fluid, the absorbing action nevertheless is exerted, and air is drawn up in quantities proportional to the vital energies of the tree at the time it is cut down. Having, by means of a simple apparatus, measured the quantity of air absorbed by the branch of a tree placed in the most favorable circumstances, he found that the volume of air absorbed almost equalled that of the branch itself. "This air," he observes, "evidently goes to supply the place of the water that is evaporated by the leaves, and its introduction into the fibres of the wood cannot fail to hasten its drying. This fact proves that it is in autumn, and not in winter, that trees ought to be cut down, and that they ought not to be stripped of their leaves."

HARBOURS ON THE SOUTH-EASTERN COAST.

The House of Commons has printed "A copy of the report of the commissioners appointed to survey the harbours of the south-eastern coast."

The commissioners were instructed to visit the coast between the mouth of the Thames and Selsea Bill, and to examine and report on the state of the existing harbours between these points, with reference to their being available as places of shelter for vessels passing through the Channel in case of distress from weather, and also as places of refuge for merchant vessels from enemy's cruisers in time of war, and more especially as to their being made stations for armed steam-vessels employed for the protection of our trade in the narrow part of the Channel; for which purpose the harbours being accessible at all times of tide, and their capability of defence, were stated to be the most important considerations.

At the various places they examined, the commissioners conferred with the higher authorities, the harbour masters, pilots, and other persons of local experience.

Captain Bullock, who was specially appointed by the Admiralty, submitted to the commissioners the following surveys:—The coast between Margate and the North Foreland, Dover Bay from Shakspere's Cliff to the South Foreland (by the way the commissioners have adopted the poet's own mode of spelling his name, as lately discovered in his own copy of "Montaigne's Essay"), the coast of Hastings from St. Leonard's East Gate to Roch-a-nor Point, Brachy Head to Langley Point, Newham and the coast from Barrow Head to Seaford Head, and Shoreham and the coast adjacent.

They report that there is no perfect harbour, "such as is capable of receiving any class of vessels under all circumstances of wind and tide," along the whole range of coast from the Nore to Selsea Bill, nor are any of the existing harbours capable, by any improvements or alterations to their present entrances, of being made accessible at low water, even to the extent of six feet, with floating berthage inside.

"Most of the harbours," proceeds the report,

"on this part of the coast, are formed by piers carried out from the main land, and are tidal harbours, dry, or nearly so, at low-water, with bars at their entrances; these harbours would therefore be excluded from our consideration, if their capability of being made available at all times of tide was to be considered a necessary condition.

"There can be no doubt, however, that the existing harbours are of importance to merchant vessels of the smaller classes, at various times of tide, according to their draught of water; and, though they may not be capable of receiving a large ship, may afford shelter to a smaller one, and thereby become a harbour of refuge to a class of vessels the most numerous and least prepared for heavy weather, or to escape an enemy in time of war.

"The value of such imperfect harbours is also increased by the diminution of late years in the size of trading vessels. The large class of ships which were employed in the West India, and the still larger in the East India trades, have been succeeded by vessels of much smaller tonnage. The coasting and coal trades are carried on in vessels of comparatively light draught of water; and steam-vessels, whose draught is easy compared with sailing-vessels of equal tonnage, are rapidly increasing in number, and often supply the places of the larger class of vessels which were formerly employed in the merchant service.

"To these vessels, therefore, some of the harbours at the present moment are open for several hours of each tide; a few of them may be capable of being rendered more accessible by the removal of obstructions at their entrances, or by additional works.

"This part of the coast possesses the advantage of a good rise of tide; and though the harbours are only available under special conditions, the numerous instances of shelter and protection afforded by each to ships in distress, serve to show their value in a national point of view, and the importance of not allowing them to fall to decay."

"The river Thames is usually considered to terminate at the Nore. From the Isle of Sheppey to Westgate Bay, the numerous sands and shoals which extend in all directions along the coast prevent the approach of vessels of any size; and the cliffs, which consist of sand and clay, are gradually yielding to the action of the sea, and supply a constant source of materials for fresh accumulations. They did not, therefore, consider it necessary to visit this part of the coast, where no harbours at present exist."

The harbours visited by the commissioners, and detailed reports of which are found in their report, were Margate, Broadstairs, Ramsgate, Deal and Sandwich, Dover, Folkestone, Rye, Hastings, Cuxmore Haven, Newhaven, Shoreham, Little Hampton, and Pagham. They then proceed to point out the situations they consider best calculated for the required harbours, which they are of opinion must be formed in the sea by means of breakwaters detached from the mainland, on the same principle as that at Plymouth Sound, or connected with the shore by piers, similar to the harbour at Kingstown near Dublin.

"The situation," says the report, "which appears to us to be of the greatest importance, and at the same time offers the most eligible position for a deep water harbour, is Dover Bay." "The principal feature of the proposed plan is a breakwater at the average distance of 1,000 yards from the shore, with piers projected from the land towards its eastern and western ends, leaving one or more entrances."

They recommend as a second place for a harbour of refuge, the bight to the eastward of Beachy Head and westward of Langley Point, and the formation there of a detached breakwater, curved or in kauts, the main body running nearly parallel with the shore, leaving entrances to the eastward and westward, to enable vessels to sail out or in with any wind. Then they say, "one and a half miles of

breakwater, including the arms, would give shelter over 450 acres of surface."

The third and last situation they recommend, is under the chalk cliffs to the eastward of Margate. The report then proceeds as follows:—

"The Chalk Bank and Longnose Spit stretch out to the north-east from Foreness Point. Upon this site they propose a pier to commence at the shore, and to be extended 1,000 yards clear, in a north-north-east direction, thence to turn west-north-west for a length of 2,000 yards, terminating in a round end, to form the northern head of the entrance. The western pier to be carried out from the shore in nearly a north-east direction, and be the same length as the east pier. This would enclose a harbour of 460 acres, of which 352 would be not less than two fathoms, increasing to six fathoms, and 108 acres would be under two fathoms at low water.

"The entrance opening in a north-westerly direction, would receive the protection of Margate Sand, and an opening in a west-north-west bearing would also permit vessels to sail in with winds from the south, round westward to north-east; and out with winds from the north, round eastward and southward to south-west. And in extreme cases, when the harbour could not be entered by sailing vessels, shelter would be given them under, or to the eastward and westward of it. The construction would be, as at Dover, a core of chalk blocks from the adjoining rocks, faced with stone. The advantages of this situation will be apparent, when it is remembered that our eastern coast is literally without shelter from easterly winds for vessels of any magnitude.

"A harbour off Foreness must, therefore, be regarded as one of refuge for vessels stationed in the North Sea, and would more particularly have reference to everything connected with the opposite ports eastward of Calais.

"For the mercantile marine, especially, navigating the northern part of the English Channel, the situation would be most desirable, inasmuch as vessels bound to the westward from the river Thames or the North Sea, arriving off the North Foreland, and then finding the wind strong from the southward and westward, would, in order to avoid anchoring in the Downs, and the liability to accidents which so frequently occur there in south-westerly gales, gladly avail themselves of the shelter which this harbour would afford.

"To vessels, also, caught in the Downs by tempestuous weather, or having received damage, a harbour off Foreness, accessible at all times of tide, would prove an invaluable asylum, where heavily laden ships would escape the danger of grounding; and a considerable fleet of such vessels would lie in perfect security from storms or an enemy, until a change of wind would enable them to proceed down the Channel.

"Similar advantages would be experienced during easterly winds by vessels from the westward, bound to ports upon the east coast; whilst to steam-vessels, the harbour would be accessible in all winds and weather.

"The cost of each of the three harbours of refuge we have recommended, may be taken as nearly equal; none of them less than £2,000,000 sterling, nor much exceeding that sum. An addition of a quarter of a mile to the length would give an increased area of 100 acres, and would add about £300,000 to the estimated expense of each harbour."

A LIST OF PATENTS SEALED FROM MAY 28TH, TO JUNE 24TH, 1840. (Continued from Page 339.)

ENGLAND.

HENRY AUGUSTUS TAYLOR, of New York, now of Milk-street, Cheapside, merchant, for improvements in the manufacture of braid and plats, 6 months, being a communication, May 28.

ALEXANDER FRANCIS CAMPBELL, of Great Plum-

stead, Norfolk, Esq., and CHARLES WHITE, of the city of Norwich, mechanic, for improvements in ploughs and certain other agricultural implements.—6 months, May 28.

SIR JOSIAH JOHN GUEST, of the Dowlais Iron-works, Glamorgan, Baronet, and THOMAS EVANS, of the same place, agent, for their invention of certain improvements in the manufacture of iron and other metals.—4 months, May 28.

EDMUND LEACH, of Rochdale, Lancaster, machine maker, for certain improvements in machinery or apparatus for carding, doubling, and preparing wool, cotton, silk, flax, and other fibrous substances.—6 months, May 28.

DANIEL GOOCII, of Paddington Green, engineer, for certain improvements in wheels and locomotive engines, to be used on railways.—6 months, May 28.

WILLIAM HENRY SMITH, of York-road, Lambeth, civil engineer, for an improvement or improvements in the mode of resisting shocks to railways, carriages, and frames, and also in the mode of connecting and disconnecting railway carriages; also in the application of springs to carriages.—6 months, May 28.

GEORGE HENRY BURSILL, of River-lane, Islington, gentleman, for an improved method or methods of weighing, and certain improvements in weighing machines.—6 months, May 28.

JAMES ALLISON, of Monkwearmouth, Durham, iron-master, and ROGER LUMSDEN, of the same place, chain and anchor manufacturer, for improvements in the manufacture of iron knees for ships and vessels.—6 months, May 30.

JOHN BAPTIST WICKS, of Leicester, framework knitter, for improvements in machinery employed in framework knitting, or stocking fabrics.—6 months, May 30.

WILLIAM PETTITT, of Bradwell, Bucks, gent., for a communication apparatus to be applied to railroad carriages.—2 months, May 30.

JOHN HAWLEY, of Frith-street, Soho, watchmaker, for improvements in pianos and harps.—6 months, being a communication, June 1.

PIERRE DEFAURE DE MONTMIRAIL, of London Wall, gentleman, for certain improvements in the manufacture of bread.—6 months, being a communication, June 2.

RICHARD FREEMAN MARTIN, of Derby, gentleman, for certain improvements in the manufacture of certain descriptions of cement.—6 months, June 2.

SAMUEL SALISBURY EAGLES, of Liverpool, engineer, for certain improvements in obtaining motive power.—6 months, June 2.

JAMES HARVEY, of Basing-place, Waterloo-road, timber merchant, for certain improvements in paving streets, roads, and ways with blocks of wood, and in the machinery or apparatus for cutting or forming such blocks.—6 months, June 2.

WILLIAM SOUTHWOOD STOCKER, of Birmingham, for certain improvements in machinery, applicable to making nails, pins and rivets.—6 months, June 2.

CHRISTOPHER DAIN, of Edgbaston, Warwick, gentleman, for certain improvements in the construction of vessels for containing and supplying ink and other fluids.—6 months, June 2.

JAMES ROBERTS, of Sheffield, merchant, for an improved mode of fastening certain kinds of horn and hoof handles to the instruments requiring the same.—6 months, June 3.

SAMUEL WAGSTAFF SMITH, of Leamington, iron-founder, for improvements in apparatus for supplying and consuming gas.—6 months, June 9.

ROBERT HAMPSON, of Mayfield Print-works, Manchester, calico printer, for an improved method of block-printing on woven fabrics of cotton, linen, silk, or woollen, or of any two or more of them intermixed, with improved machinery, apparatus, and implements for that purpose.—6 months, June 9.

ALEXANDER SOUTHWOOD STOCKER, of Birmingham, for improvements in the manufacture of tubes for gas and other purposes.—6 months, June 9.

CHRISTOPHER NICKELS, of York-road, Lambeth, gentleman, for improvements in the manufacture of braids and plats.—6 months, being a communication, June 9.

THOMAS EDMONDSON, of Manchester, clerk, for certain improvements in printing presses.—6 months, June 9.

JOHN GEORGE SHUTTLEWORTH, of Feamley-place, Glossop-road, Sheffield, gentleman, for certain improvements in railway and other propulsion.—6 months, June 9.

FRANCIS GReAVES, of Radford-street, Sheffield, manufacturer of knives and forks, for improvements in the manufacture of knives and forks.—6 months, June 11.

WILLIAM LANCE, of George-yard, Lombard-street, insurance broker, for a new and improved instrument or apparatus to be used in whale fishery, part or parts of which, upon an increased scale, are also applicable as a motive power for driving machinery.—6 months, June 11.

BENJAMIN WINKLES, of Northampton-street, Islington, copper-plate manufacturer, for certain improvements in the arrangement and construction of paddle-wheels and water-wheels.—6 months, June 11.

JOSEPH WOLVERSON, of Willenhall, Stafford, locksmith, and **WILLIAM RAWLETT**, of the same place, latch-maker, for certain improvements in locks, latches, and other fastenings for doors.—6 months, June 13.

EZRA JENKS COATES, of Bread-street, Cheapside, merchant, for certain improvements in propelling canal and other boats.—6 months, being a communication, June 13.

EDWARD JOHN CARPENTER, of Toft Monks, Norfolk, a commander in the Royal Navy, for improvements in the application of machinery for assisting vessels in performing certain evolutions upon the water, especially tacking, veering, propelling, steering, casting or winding, and backing astern.—6 months, June 13.

RICHARD BEARD, of Egremont-place, New-road, gentleman, for improvements in apparatus for taking or obtaining likenesses and representations of nature, and of drawings and other objects.—6 months, being a communication, June 13.

RICHARD PROSSER, of Birmingham, civil engineer, and **JOHN JAMES RIPPON**, of Wells-street, Middlesex, ironmonger, for certain improvements in apparatus for heating apartments, and in apparatus for cooking.—6 months, June 17.

RICHARD PROSSER, of Birmingham, civil engineer, for certain improvements in manufacturing buttons for certain materials, which improvements in manufacturing are applicable in whole, or in part, to the production of knobs, rings, and other articles from the same materials.—6 months, June 17.

THOMAS DE LA RUE, of Bunhill-row, manufacturer, for improvements in printing calicoes and other surfaces.—6 months, June 20.

JOHN AITCHISON, of Glasgow, merchant, and **ARCHIBALD HASTIE**, of West-street, Finsbury-square, merchant, for certain improvements in generating and condensing steam, heating, cooling, and evaporating fluids.—6 months, June 24.

WILLIAM HICKLING BENNETT, of Wharton-street, Bagnigge-wells Road, gent., for improved machinery for cutting or working wood.—6 months, June 24.

WILLIAM ASH, of Sheffield, manufacturer, for certain improvements in augurs or tools for boring.—6 months, being a communication, June 24.

WILLIAM WOOD, of Wilton, carpet manufacturer, for certain improvements in looms for weaving carpets and other fabrics.—6 months, June 24.

JOSEPH LEES, jun., of Manchester, calico printer, for certain improvements in the art of printing calicoes and other surfaces.—6 months, June 24.

EXPIRED PATENTS.

PATENTS THAT HAVE EXPIRED DURING THE WEEK ENDING JUNE 20, 1840.

ENGLAND.

HENRY RICHARD FANSHAW, of Addle-street, in the city of London, silk embosser, for an improved winding machine, June 15.

JOHN HAM, late of West Croker, but now of Holton-street, Bristol, in the county of Gloucester, vinegar maker, for an improved process for promoting the action of the acetic acid on metallic bodies, June 15.

THOMAS JOHN KNOWLYS, of Trinity College, Oxford, Esq., who, in consequence of a communication made to him by a certain foreigner residing abroad, is in possession of a new manufacture of ornamental metal or metals, June 15.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE ENROLLMENT OFFICE, UP TO THE WEEK ENDING JUNE 20, 1840.

(Continued from No. 46.)

ENGLAND.

MOSES POOLG, Lincoln's-inn, improvements in the manufacture of caustic soda and carbonate of soda, June 9.—First, the hydrochlorate of ammonia, obtained in converting common salt into soda, is used for restoring sulphate of ammonia.

Secondly, the sulphate of soda is decomposed as usual, but in a close vessel to prevent evaporation.

Thirdly, The sulphate of sodium, gained in the latter operation, is dissolved in pure water and then filtered, whereupon protoxide of copper finely powdered must be gradually mixed with the solution and until it is well combined.

Fourthly, To obtain a dry caustic soda, the sulphuret gained as above, must be evaporated; or to saturate it with carbonic acid, the inventor adopts the following method:—a receiver made of stone or granite is lined with Roman cement, and while the sulphuret liquid is kept at a gradual heat, the carbonic acid must be admitted to the receiver in small quantities.

Fifthly, The sulphuret gained as in the third improvement, is converted into deutoxide of copper, by calcinating it in an iron muffle, and the sulphurous acid gas therefrom is conveyed into another apparatus for preparing sulphate of ammonia. The sulphuret of copper, which forms a couch at the bottom, must be well stirred up until the smell of sulphurous acid is entirely gone, when this portion of deutoxide of copper is removed for a fresh supply to undergo the like process.

ROBERT GILL RANSON, Ipswich, paper maker, and **SAMUEL MILLBOURN**, of the same place, improvements in the manufacture of paper, June 13.—The paper in passing from the size trough, is conveyed to smoothing rollers and to cylindrical rollers, made as follows:—Battens of wood, covered with felt, are placed at intervals round the cylinders, and between these battens, holes are made, whereby fans that revolve within these rollers, agitate the air which passes through the holes for the purposes of drying the sized paper, while on its passage over the cylindrical rollers, which rotate quietly and independent of the fans that revolve within.

ANGIER MARCH PERKINS, Great Coram-street, Middlesex, civil engineer, improvements in apparatus for transmitting heat by circulating water, June 16.—These improvements are applicable to a former patent, which was for passing a quantity of pipe from the bottom of the furnace, and in a serpentine

manner, through the hot air passage, and into the boiler.

The first improvement is for supplying, by means of a force pump or other simple contrivance, any deficiency of water that may be caused in the pipes, through waste or evaporation. This apparatus being conveniently situated near one end of the pipes, is merely a cylinder containing a quantity of water, and the piston is pushed down by a weighted lever.

Second improvement is for a safety valve, that opens inwards on the top of the boiler.

Third improvement is the use of an expansion or safety valve, to allow a portion of the water to flow out of the boiler. A pipe near the bottom of the boiler is carried up into a chamber, where the end of it is bent at right angles, and a piece of tube is fixed vertically at this end, so as to form a T, with an opening at the upper and lower end. A cap, forming a valve, covers the upper orifice; whereby the cold water in the boiler on becoming heated, passes through the pipe, and raises the cup valve, and the overflow enters the chamber, which again supplies the boiler when requiring water, which passes up the bottom orifice of the T head, and along the pipe again into the boiler.

Fourthly, the inventor employs hot-water tubes as fire-bars.

Fifthly, water is kept at any degree of heat by means of a heated governor or regulator. A vertical pipe passes from near the bottom of the boiler. The sliding tube on this vertical pipe is connected by means of a rod to a lever, which is also connected with the damper of the furnace. When the water has attained the degree of heat required, a nut is fixed on the sliding tube, so that when the heat is raised, the lever will close the damper, which may be opened by the lever when the water is reduced in temperature.

HENRY SKYMEUR MOORE VANDELEUR, Kilrush, Clare, Ireland, certain improvements in paving or covering roads and other ways, June 16.—The inventor claims the method of giving a different angle to each block that forms the line of blocks from one side of the road to the other. The angles of the blocks are produced by radial lines, diverging from a centre point below the surface, as well as above the surface; thus, the nearer the point forming the radial lines is placed above or below, the greater will be the angles in the blocks which are held together by such angles.

Second improvement is for cutting out spaces in the corners of rectangular blocks, which are dowelled together by small cubes of wood, or pegs may be used.

SAMUEL WALTON FAXON, Park Village, East, Regent's Park, surgeon, apparatus to be applied to the chimneys of gas and other burners, and lamps to improve combustion, June 16.—A concave disc or cup of copper is attached to a porcelain tube about $\frac{1}{2}$ inch long, which being suspended above the flame, collects the unconsumed gaseous and carbonaceous matters that pass off; thus, by the non-conducting material of clay, the concave disc becomes heated to a high temperature, so as to consume the smoke or gaseous particles.

Devonshire clay from Newton Bushel, Teignmouth, being considered least friable, is best adapted for the small tube.

MONNIN JAPY and **CONSTANT JOUFFROY DUMERY**, Great George-yard, Lombard-street, improvements in rotary engines to be actuated by steam or water, June 16.—Although the drawings attached to this specification are numerous, yet they are so badly arranged, that it is impossible to obtain a correct idea of the working part of the rotary engine. The axle that supports the revolving piston is made hollow, and the steam or water being admitted, forces the piston round, until it presses against a diaphragm, which acts as a fulcrum for the steam or water to press against; on the steam passing off, the diaphragm slides into a groove, while the piston passes on to the second diaphragm.

There are other improvements, which are unconnected with the title of the invention.

First, is for supplying a boiler with water: a pipe with its orifice down, passes from the top to about the middle of the boiler; when the water becomes below the orifice of the pipe, the steam passes up and forces down a lever, at the end of which is a valve, that opens and admits the water from a tank, into a chamber or cylinder with a float therein, which float becoming buoyant in the water, opens, by means of a rod, another valve that is over a pipe for conducting the water into the boiler.

Secondly, The safety valve is placed in a chamber separate from the boiler, and the steam entering through a tube, forces the plates up which constitute the valve; each plate is equal to $\frac{1}{2}$ atmosphere.

Lastly, There is an improvement for lubricating the whole of the machine; this requires a better illustration to make it intelligible.

DAVID MORISON, Wilson-street, Finsbury, ink-maker, *improvements in printing*, June 16.—First improvement consists in the arrangement of rollers for conveying the inking or coloring matter to the printing roller. A prism placed first, receives the coloring matter, which conveys it to three rollers that run close together, and are worked by cog-wheels and racks; a thumb-screw will regulate the position of each roller, which also has a vibrating motion, in order to smooth the surface of ink. A cylindrical roller arranged with stereotype plates, is brought in juxtaposition with the roller that has a film or inking surface; thus as the subject for printing is conveyed round, the inking rollers are continuously supplied with the ink.

Secondly, a number of the rollers, with separate prisms, are arranged in different intervals around the cylindrical printing roller, which has the printing surface placed also at intervals; whereby the inking of each set of rollers is conveyed to a separate plate, which imprints the different colors on the paper, that is passed by bands to the blanket or stuffing roller, and whereby soft substances, as cork, &c., may be printed without injury.

Lastly, the method of employing springs within the printing surface of the cylinder, for the purpose of printing or stamping on substances or articles of unequal thickness.

JOHN ROBINSON, North Shields, Northumberland, engineer, *an improved steering apparatus*, June 16.—At the head of the rudder is a segmental cog-wheel, worked by a worm-screw that is placed in an oblong box or frame, which works on a pivot running into a solid block or stanchion on the deck of the vessel. Along the upper part of the box or frame, are belaying pins, which are connected by a cord or rope, so as to avoid the sudden jerk of a wave against the rudder, and to prevent the possibility of breaking the cogs of the worm-screw and segment. The force of the wave merely causes the box or frame to move on its pivot, when springs, or the cords, will bring it again to its proper position.

Lastly, when the rudder is forced up by its gudgeon and pintles, the pivot of the box or frame rises in the socket of the solid block or stanchion.

WILLIAM NEWMAN, Birmingham, brass-founder, *certain improved mechanism for roller-blinds*, June 16.—The object of this improvement, is to substitute a certain mechanism at each end of the roller, so as to hold up the blind, in place of the ratchet, rack, and cord.

On the left end of the roller, on which the blind folds and unfolds, is placed a metal cap with a stout metal pin, that fits into the cylinder of a socket; a helical or spiral spring is placed on the pin, so as to press against the socket that is fitted on the frame of the window.

The opposite end of the roller blind has a metal cap, in form of a pulley, that will receive a length of cord; a metal pin also projects at this end, which slides into a metal groove affixed at the right hand side of the window frame. A spring catch holds the pin in its proper position, and prevents it from coming out of the groove.

Thus, when the whole length of blind is wound on the roller, a cord of equal length is unwound from the pulley at the right end. The helical spring

pressing laterally, causes a friction sufficient to hold the blind in any position required, when it is pulled down by the cord, pending to the lathe of the blind; also in pulling the tassel of the cord on the pulley, the blind is again wound on the roller.

JOSEPH GIBBS, Kennington, Surrey, engineer, *an improvement or improvements in the machinery for preparing fibrous substances for spinning, and in the mode of spinning certain fibrous substances*, June 20.—First improvement is for preparing flax, the beds of the machine move on friction rollers, and receive a vibratory motion, by means of eccentric wheels, which are attached to arms projecting from the inner part of each bed. Two jagged rollers placed parallel, and with their peripheries almost touching, are made to revolve on standards attached to the vibrating beds. A jagged roller is also placed above and parallel with the two rollers on each bed. The whole machinery is put in motion by suitable cogwheels, and the rollers moving simultaneously, draw in the sliver of flax, while the eccentric wheels cause a vibrating motion to the under rollers.

The second improvement is for combing out slivers of silk, cotton, &c. A drum wheel is covered with fine pointed teeth, and near the circle of this drum is placed a revolving brush, which holds down the fibre or sliver of silk, as it passes from the feed rollers. The rapid motion of the revolving drum causes the fibre to lengthen, while the revolving brush holds it down; thus, when a sufficient quantity has been collected, it may be removed in a body from the fine pointed teeth, and then it may be passed through pressing rollers previous to spinning.

The third improvement is for the method of covering thread with another fibre. The thread in passing over the ball of the fibre that is wetted to increase its tenacity, receives a coating, which is immediately pressed on by means of two rollers.

HENRY FRANCIS RICHARDSON, Ironmonger-lane, City, *improvements in the construction of omnibuses*, June 20.—The inventor claims the method of constructing an omnibus, with a partition running longitudinally down its centre, and seats are attached to it, whereby the passengers are seated with their backs against the partition, and with their faces opposite the windows of the omnibus.

A door is placed at the end of each division, and the conductor stands between the two doors.

The inventor concludes, by this novel arrangement, that the passengers are not so liable to catch cold, as in the ordinary omnibus.

NOTICE.

In accordance with the determination expressed in our 26th Number, of giving one month's clear notice to Inventors, before publishing their specifications, we hereby inform the following Patentees, that their specification will be published in the "INVENTORS' ADVOCATE," of August 1. Each party will receive, in addition, a private communication to the same effect.

Charles Wheatstone, Conduit-street, Hanover-square, and

William Fothergill Cooke, Sussex cottage, Slough, due July 21.

Samuel Brown, Finsbury-pavement, civil engineer, due July 21.

Joseph Rock Cooper, Birmingham, gun-maker, due July 21.

William Stone, of Winsley, due July 21.

James Hall, of Glasgow, upholsterer, due July 21.

Arthur Howe Holdsworth, of Brookhill, Devon, due July 21.

William Colman, of Leicester, framesmith, and

Joseph Wale, of the same place, framesmith, due July 21.

Samuel Wilkes, Darleton, ironfounder, due July 21.

George Wilson, St. Martin's-court, St. Martin's-lane, due July 21.

Charles Rowley, Birmingham, stamper and piercer, and

Benjamin Wakefield, of Bordesley, machinist, due July 21.

Edward Halliley, of Leeds, cloth manufacturer, due July 21.

William Hunt, Portugal hotel, Fleet-street, due July 21.

Miles Berry, Chancery-lane, due July 21.

Jules A. S. de Gournay, Bread-street, due July 22.

George Clarke, Manchester, manufacturer, due July 23.

Alexander Helt, Gower-street, Bedford-square, due July 23.

James Bingham, Sheffield, manufacturer, and

John A. Boden, of the same place, due July 25.

FOREIGN CORRESPONDENCE.

FRANCE.

IMPORTATION OF LINEN FABRICS AND YARNS INTO FRANCE.

At a time when the interesting question of the linen manufactures of France is about to be discussed by the French Chambers, it will be useful to lay before the public a particular account of the importations of foreign linen fabrics and yarns from the two countries which have hitherto competed with our own manufacturers, in our own markets, in the production of similar goods. The question more particularly concerns our commercial relations with England and Belgium, but in different respects, which it is advisable should be understood. Thus, the importation of these articles from those two countries since 1832, from which year their respective competitions in this trade may be dated, has undergone material modifications. The following figures, exhibiting the quantities, in quintals, imported since 1832, are extracted from the Tables of Commerce, published by order of the government; those of 1839 have been taken from the exposé of the project of the law of customs, recently presented to the Chambers:—

LINEN AND HEMPEN YARNS IMPORTED.*

	England.	Belgium.	Other Countries.	Total.
1832..	564	688	1,160	8,605
1833..	4,184	8,248	1,802	14,234
1834..	8,264	7,143	1,910	17,317
1835..	12,956	6,548	1,763	21,267
1836..	19,011	6,357	2,101	27,469
1837..	31,999	5,413	1,779	39,191
1838..	52,457	4,059	1,526	58,042
1839..	61,677	6,495	68,172

LINEN AND HEMP CLOTHS IMPORTED.

	England.	Belgium.	Other Countries.	Total.
1832..	34	29,198	2,738	31,970
1833..	325	36,357	3,443	39,832
1834..	953	34,654	4,977	39,726
1835..	733	34,830	5,383	40,347
1836..	843	42,620	7,132	50,595
1837..	4,756	36,550	5,324	46,629
1838..	13,765	33,641	4,115	51,521
1839..	9,492	29,252	3,100	41,844

Let us remark, in the first place, as regards the import from other countries than England and Belgium, that the quantities, which are inconsiderable, have continued nearly stationary both for yarns and cloths; it has even diminished since 1836. The competitors of the second order appear to have

* These figures for 1839, taken from the exposé of the project of the customs' law, does not comprehend the colored and printed cloths, which are comprised in the preceding accounts, the amount of which averages at least 300.

withdrawn from the lists, to make room for the only two real combatants.

Two principal facts are ascertained from the preceding tables, viz., that it is from England especially that the yarn is supplied; and that Belgium has hitherto supplied the greater portion of the linen cloths. But if we examine the progress of the importations of each of these articles, it will be seen, 1st, as regards the yarn, that Belgium has diminished its quantity, whilst the imports from England have constantly increased. 2d, as regards woven fabrics, that the imports from Belgium, which continued stationary to 1835, have diminished since 1836, whilst the exports from England have rapidly increased. Thus there is an increase on the part of England in the article of yarn, and a decrease on the part of Belgium in woven cloths; in other words, there is an increase on the part of England in both articles.

It will be objected, no doubt, that this comparative increase on the imports of cloths, was succeeded in 1839 by a diminution of the real quantity, both as regards England and Belgium. This fact is, in our opinion, of little importance. We believe that this check on importation, which is more apparent than real, ought to be viewed with mistrust, especially in reference to England. Production often exhibits similar oscillations; it falls back for a short time, and then puts forth its energies with vigor greater than ever. It may be said, indeed, that the number of English woven fabrics is very trifling, compared with the whole amount imported; but we must not lose sight of the rapid increase that England has made from 1821 to 1828, a fact that seems to correspond with another circumstance which was little foreseen at the time, viz., the enormous increase of the imports of English linen yarns from 1832 to 1835; for instance, the imports of English linen cloths, which in 1836 was only 843 quintals, has increased in 1839 to nearly one-third of those from Belgium. This, in three years, is a good beginning.

By means of her machinery, and still more by means of her skill in workmanship, England threatens to supplant Belgium in the supply of cloths, as she has already done in the supply of yarn. This is a consideration that ought by no means to be lost sight of, in the forthcoming regulation of duties on linen yarns and fabrics. If the restrictions on import are only to be laid on yarns, which are suitable to our manufactures of cloth, the French fabrics will suffer from the diminished supply of English thread (if there be a diminution in consequence of the increased duties), and the duty on woven fabrics remaining the same, it may be foreseen that England will redouble her efforts to increase the imports of her linen cloths to at least equal the amount of the yarn which our new duties may prevent from entering into the country. The effect of this will only be to give an additional stimulus to English industry.—*Moniteur Industriel*.

PROPOSED EXCLUSION OF ENGLISH LOCOMOTIVE STEAM-ENGINES ON FRENCH RAILWAYS.

In the discussion in the Chamber of Deputies last week, relative to the railroads from Montpellier to Nismes, M. Arago proposed, as an amendment, to oblige the railroad companies to buy nine-tenths of their locomotive engines in France, unless the price exceeds 15 per cent., the average price of English engines. The *Journal des Débats* remarks upon this proposition,—“the French engines are worth either more or less than those made in England, but it is neither the government, nor the chamber, nor M. Arago, who can be judges of their value; it is a question to be determined only by the purchasers. The government and the chambers may protect national industry by prohibitions, or by high duties, but their functions end there. No one shall dare say to purchasers ‘you shall be compelled to buy such a machine, and not another!’ To adopt such a

proceeding would be to make us retrograde to the infancy of society, and to the most oppressive acts of despotism.” The amendment was unanimously rejected as impracticable. The question was, however, referred to the commission of customs; because, adds the *Debats*, “it seems to be at present agreed, that there is no idea, however bad, that cannot be made into a good law.”

THE NEW FRENCH DUTIES ON LINEN YARNS.

We are enabled to show exactly how the proposed French duties will bear upon our linen yarns. In the first place, we have to observe that the duties now levied on yarns in France are calculated per 100 kilogrammes, equal to 220½ lbs. English weight, and that the present duty is as follows:—Line yarns, per 100 kil., 26f. 40c., equal to 1½d. per lb.; Tow yarns, per ditto, 15f. 40c., equal to 0½d. per lb.

By the proposed plan it is intended to apply the same rate of duties to all descriptions of unbleached yarns, whether line or tow, according to the following scale:—

fr. c.	per lb.
1 to 10 lea—17	60 per 100 kil., equal to ¾d.
11 to 20 26	40 1½d.
21 to 29 44	0 2d.
41 & upwards 77	0 3½d. 10d.

According to this scale, the amount of duty on the “bundle” would be as follows:—

8 lea, 1s. 6½d.; 10 lea, 1s. 3d.; 15 lea, 1s. 3d.; 20 lea, 11½d.; 25 lea, 1s. 4d.; 30 lea, 1s. 1½d.; 40 lea, 10d.; 45 lea, 1s. 3d.; 50 lea, 1s. 1d.; 60 lea, 1½d.; 70 lea, 9½d.; 80 lea, 8½d.; 90 lea, 7½d.; 100 lea, 6½d.
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If we compare these rates with the present duties, we shall find them to be a very great increase. The yarns shipped to France, from this country, are, in general, those rating from 30 to 60 lea, inclusive. The present duty upon 30 lea is about 7d.; it is proposed to raise it to 1s. 1d., that is, nearly to double it. Upon 40 lea it is about 5½d., and it is proposed to raise it to 10d. Upon 45 lea the present duty is about 5d., and it is proposed to increase it to 1s. 3d., that is, to treble it! On fifties, sixties, and seventies, the increase would be about the same.

Such is the nature of the proposed alterations, and it is pretty evident that this country has a right decidedly to object to them. We were told that France was about to make concessions, and to exhibit a liberal spirit, for the sake of encouraging reciprocity. In this particular, at least, the concessions are of a very extraordinary nature.

Of our various manufactures, there is none of which we export nearly so much to France as we do of linen yarns. We have beside us a table, showing the countries to which the largest proportions of our principal manufactures were exported in 1838; and from it we find that—whilst our exports to France were, in woollens, only £224,383; in woollen yarns, £22,162; in linens, £273,854; in hardware and cutlery, £58,555; in brass and copper manufactures, £371,363; and in machinery, £124,361—we exported 11,485,680 lbs. of linen yarn, the declared value of which was £600,806.

We believe that our last year's exports of yarn to France, would show a great increase upon those of 1838; and we ask, will our government submit that this, by far the most important branch of our trade with that country, shall be crippled by a commercial treaty where mutual concessions were anticipated?

The members of the scientific commission of Algeria, sent to Constantine, continue their labors with an activity that promises the most valuable results. They could not pursue their inquiries in that province under more favorable circumstances. General Galbois has afforded the members of the commission every possible assistance. Every thing that could forward their researches has been placed at their command. No

expedition is undertaken of which they do not form a part, nor have they failed to avail themselves of the advantages thus conferred on them. They have already, during two months, travelled over more than a hundred leagues in different directions, followed by the expeditionary columns, partaking the fatigues, the privations, and also the dangers of a wandering and warlike life. M. de Carette, one of the commission, was wounded in a battle with the tribe of Rigas, on the 19th of May. The wound, however, is fortunately not dangerous.

BELGIUM.

Preparations are already making at Antwerp for the fêtes that are to take place on the inauguration of Rubens's monument on the 15th of August. The fêtes are to last eight days. On the day of inauguration, says the *Précureur*, all the illustrious men that Antwerp has produced will rise from the tomb, as if by enchantment,—Quentin Metsys, Van Dyk, Devos, Seghers, Van Schoonbeke, Jordaeus, and many others will appear before the houses they inhabited among our forefathers. The presence of their effigies in almost every street in the town, will show foreigners what a great number of men of genius Antwerp has reason to boast of having produced. One part of the fête, which will not fail to please a great many of the people, is, that the pump of the great blacksmith-painter, Quentin Metsys, will, on this day, pump up good old wine instead of water; and at the monument to Von Schoonbeke, in the brewers' quarter, there will be a constant flow of that agreeable Antwerp beer, formerly so celebrated and so much drunk in the time of that great painter.

The Antwerp Steam-ship Company has made an offer to the Belgian government to undertake the charge of the Transatlantic steam navigation. It promises to employ only national ships, to build them in Belgium, and to use engines and boilers made in that country. It requires from the government a guarantee of interest at the rate of 4 per cent., and a redemption fund of 1 per cent. If these offers are accepted, the company proposes to increase its capital to 6,000,000 francs.

The *Contrôleur*, an Antwerp journal, says—“Some merchants united with capitalists in this city, have agreed to establish a factory at New York, to be in direct correspondence with the whole of Belgium, so as to facilitate our relations with the United States, to assist our manufacturers in effecting the sales of their products, and to make purchases of goods in return. From the 1st of July next, a Belgian ship of the first class will depart regularly from the port of Antwerp, so as to reduce the premium of insurance to the lowest scale, by giving the preference to our insurance companies. If towards the middle of the month, an American ship should enter the port, the company intends to let it have all the freight that is ready for that destination, in order to avoid delay, and to furnish a direct proof of the sincere desire that animates them to establish commercial and friendly relations with the United States.”

GERMANY.

EXTENSIVE EMIGRATION FROM GERMANY.—For several days past, the coach direct from Paris, has brought us whole families of Germans on their way to Havre, where they are to embark for America. So considerable is the number of these emigrants, that the ordinary vehicles from Paris to Havre, were found insufficient to convey them, and the authorities of the *Messageries Royales* send some of them by our diligence as often as any places in it chance to be vacant.—*Dieppe paper*.

NEW SOUTH WALES.

An arrival direct from Sydney brings intelligence from this colony to the middle of February, being several days later than the accounts received last week through Van Diemen's Land. We find no event of great importance, but several matters not uninteresting to persons in this country connected with New South Wales and New Zealand.

It appears that the export of wool during the current year, is expected to be no less than seven millions of pounds, being nearly a million more than in 1839.

The following table has been published in the Sydney papers. It shows the great value of the British trade with New South Wales.

Return of the Declared Value of British and Irish Produce exported to New South Wales in the year ending the 5th of January, 1840, with the proportion to similar Exports from the United Kingdom in the preceding year to other countries.

The declared value of exports to New South Wales, exclusive of the other Australian colonies, 5th of January, 1840	£1,173,440
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Exceeds the declared value of exports to Sweden	£102,647
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Ditto, to Norway	77,485
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Ditto, to Denmark	181,404
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Ditto, to Prussia	155,223
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Ditto, year ending the 5th of January, 1839, by more than one-half, amounting together to	516,759
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If exceeds by 1-10th that to Belgium	1,068,010
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Ditto, ditto Portugal	1,165,395
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It almost equals that to China	1,204,356
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Ditto, ditto { Australian colonies generally	1,336,662
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It is only 1-4th less than to Russia	1,663,243
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— 2-5ths — Turkey	1,767,110
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It is about 3-5ths that to Brit. N. America	1,992,457
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— one-half — France	2,314,141
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— 3-5ths — Italy	3,076,235
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— 1-3d — B. W. Indies	3,393,441
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— 1-3d — Holland	3,549,429
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— 1-3d { E. I. Company's Territory	3,876,196
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— 1-4th { States of South America	4,726,905
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— 1-4th — Germany	4,998,900
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— 1-6th { United States of America	7,585,760
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The official value of exports, on the 5th of Jan., 1840, to New South Wales, was —	
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British and Irish produce and manufactures	1,440,446
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Foreign and colonial merchandise	289,072
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	£1,729,518
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Employing with passengers, 416 vessels, with a tonnage of 48,911 tons; in return for which exports, this colony sent back, in 1839, 6,894,863 lbs. of wool, besides oil from the fisheries.

In the month of January, 990 free emigrants and 213 convicts arrived at Sydney.

Complaints are made of the insecurity of life and property in the country districts. Sir George Gipps is accused in the *Sydney Herald*, by "a half ruined planter," of sitting at his ease in the capital, whilst the interior is overrun with murderers and marauders of all descriptions, who plunder the settlers in gangs too numerous and desperate for resistance.

"In the year ending June, 1838, the Sydney magistrates disposed of fourteen thousand two hundred and sixty-six cases summarily, of which a great proportion were drunkards. During the same period, two hundred and twenty-three persons were committed to take their trials for felonies, and three hundred and eighty for misdemeanors. In the year ending June, 1839, the number of summary

cases was fourteen thousand six hundred and thirteen; of felonies, three hundred and fifty eight; and misdemeanors, two hundred and ninety-two. The increase of summary cases for the year was thus, three hundred and forty-seven; and on felonies, one hundred and thirty-five—more than half; while the misdemeanors decreased eighty-eight. The total number of cases in the first year, was fourteen thousand eight hundred and sixty-nine, and in the last, fifteen thousand two hundred and sixty-three—an increase of three hundred and ninety-four. In the year ending June, 1839, five thousand two hundred and seventy-four drunkards were disposed of at the Police office, five hundred and seven of them were by information under the new act, which causes the drunkard to be sent to the tread-mill, if a man; to the cells, if a woman."—*Sydney Herald*, January 31.

PRUSSIA.

THE LATE KING OF PRUSSIA'S FUNERAL.

The *Prussian State Gazette* gives the following account of the funeral of the late King:—"At ten o'clock in the morning of the 11th inst. all the galleries of the Cathedral of Berlin were crowded; the diplomatic body and the great officers of state, who had been invited to the ceremony, were in the seats appointed for them. Soon after, the tolling of the bells announced the approach of the remains of the august deceased, which were to receive the final benediction before being carried to the vault at Charlottenburg. When brought into the cathedral, the coffin was placed on an estrade covered and draped with black, and the insignia of royalty on stools around it. After a solemn dirge was chanted, Dr. Ehrenberg, the first court preacher, delivered an impressive discourse, and in conclusion pronounced the benediction over the dead monarch. The artillery fired minute guns. At the same time the King, the Emperor of Russia, the King of Hanover, the Grand Duke of Mecklenburg-Strelitz, the Duke of Anhalt-Dessau, the Princes, and the household of the deceased, kneeled before the coffin, and made their prayers in silence, joined by the Queen and the Princesses. The scene was deeply affecting, particularly after the service, when the royal mourners embraced each other, overwhelmed in tears." The *Gazette* gives the following extract from the will of the late King:—"I pardon all my enemies, even those who have afflicted me by their writings, and who by their malevolent attacks have endeavored to deprive me of the love of my people, which is my greatest treasure." It likewise copies the following, addressed by the deceased King to his successor:—"Preserve yourself, my son, against that spirit of innovation which now reigns in all places, but at the same time be not too much attached to old predilections. It is only by avoiding these two rocks that you will be able to reign happy on the throne of your ancestors." As regards the foreign policy, the new King is recommended in the will to co-operate with all his influence in the maintenance of the peace of Europe, for which purpose he must ever keep up the alliance between Austria, Russia, and Prussia. "I have always found in this alliance," these are the expressions of the late King, "the strongest guarantee of the maintenance of the peace of Europe."

THE LATE KING OF PRUSSIA.—A Berlin letter in the *Frankfort Journal* says, that all the royal family followed the King's coffin from the palace to the cathedral on foot, on the occasion of the funeral, the Queen walking between the King and the Emperor of Russia. The remains of the late King of Prussia were conveyed to Charlottenburg on the night of the 11th inst. The procession passed along the alley of the linden trees, which is generally closed against carriages and horses. It commenced with two grooms bearing torches, followed by a company of the 1st regiment of foot

guards; next came two more grooms with torches, then a coach, in which were the Prince de Wittgenstein and M. de Massow, marshal of the court. The funeral car, hung with black, and drawn by eight horses, preceded and followed by two more grooms with torches, came next; the cortège closing with six coaches, containing the aides-de-camp and other persons attached to the service of the deceased Monarch.

ANECDOTE OF THE LATE KING OF PRUSSIA.—(From the *Constitutionnel*).—On the evening preceding the day of his death, his Majesty, who had been accustomed to hear the working of a pump which stood in the yard of the palace, and to which the public were allowed free access on account of the excellence of the water, demanded why it was he no longer heard it. On being informed that it was locked up, lest the noise should disturb His Majesty, "Open it immediately," replied the King; "I will not have my people, because I am ill, condemned to drink bad water."

VIENNA, JUNE 13.—The Emperor having been informed of the death of King Frederick William III, addressed the following letter to Count Hardegg, General of Cavalry, and President of the Aulic Council of War:—"My dear Count,—In order to do especial honor to the memory of his late Majesty King William III. of Prussia, and taking into consideration the glorious alliance of the monarchs who accomplished the memorable events of the years 1813, 1814, and 1815, I have decided that the regiment of Hussars which bears the name of Frederick William III. shall for ever preserve the same. During the mourning, which is to be worn during five weeks in honor of this Sovereign, the colors of this regiment will be covered with black crape. In order to give his Majesty, King Frederick William IV. of Prussia, a proof of my friendship, I transfer to him this regiment, which belonged to his august father. You will forthwith proceed to execute my wishes on this subject. Schoenbrunn, June 11.—FERNAND."

THE NEW KING OF PRUSSIA.—The following anecdote of the new King of Prussia is related in the *German Journal of Frankfort*, and is said to be in general circulation at Berlin:—"Immediately after the audience granted by the King to the municipal council, and at which his Majesty was much affected, Count Alexander de Humboldt, his friend and adviser, entered, when the King said to him, 'I wish to know what my people think of me.' M. Humboldt replied, 'The people love you, but they are afraid that you will grant too great protection to the nobility.' 'They are wrong,' said the King; 'as Prince Royal I was the first noble, and acted properly in protecting my order; but now that I am King, I am first citizen.'"

RAILWAY INTELLIGENCE,

DOMESTIC AND FOREIGN.

THE SOUTH-WESTERN RAILWAY FESTIVAL.—The committee, which was appointed at a public meeting at Southampton, on the 26th of May, having made all the necessary arrangements, it was resolved that the celebration of the opening of the whole line of railroad from London to Southampton should take place on Saturday last, and accordingly on that day a splendid festival was held in the Royal Victoria Archery Grounds, at Southampton. At 10 o'clock a very numerous company of ladies and gentlemen, upwards of 180, were assembled at the Vauxhall station, including his Royal Highness the Duke of Sussex, the Duchess of Inverness, his Excellency M. Guizot, the French Ambassador, Lord Palmerston, Mr. Easthope, M.P., Mr. Holmes, M.P., Mr. Serjeant Adams, &c. The train left the Vauxhall station at half-past 10, and reached Southampton at half-past 1, without any accident on the road. The terminus at Southampton presented a most animated appearance; a dense crowd of persons

of all classes were assembled to do honor to the Royal Duke and to the French Ambassador, and to congratulate them on their visit. A guard of honor from the 61st regiment, which is quartered in the town, with their officers and military band, was in attendance, the royal standard was unfurled, and the repeated discharges of artillery announced their arrival. On alighting from the carriage in which he had been conveyed, the Duke of Sussex was met by the Mayor of the town, and the town council, who accompanied him into one of the large rooms of the terminus, and presented him with an address voted at a meeting on Tuesday last, of which the following is a copy. "May it please your Royal Highness, we, the Mayor, Aldermen, and Burgesses of the town and county of Southampton, beg respectfully to approach your Royal Highness, and to offer to you our sincere and cordial congratulations on the auspicious occasion of your Royal Highness's visit to our ancient town, amongst whose burgesses the name of your Royal Highness has been long recorded. We hail with peculiar satisfaction the arrival of your Royal Highness to assist in celebrating the completion of the railway from London, evincing as it does the interest your Royal Highness takes in an undertaking which promises to be of vast and permanent importance to the town and its future prosperity. That your Royal Highness may long continue in the enjoyment of uninterrupted health, and in the beneficial exercise of that powerful and enlightened patronage which your Royal Highness has afforded to works of public interest and improvement, is our most earnest prayer." The Lodge of Freemasons also presented his Royal Highness with a congratulatory address, to which and to the address of the corporation he returned an appropriate answer. On arrival at the Archery Grounds, at which place the most excellent arrangements had been made by the committee to prevent confusion, the company were admitted by tickets to the grounds. There, on a beautiful esplanade of turf, and close to the edge of the Southampton Water, was erected one of the largest marquees which the manufactory of Mr. B. Edginton, of Duke-Street, Borough, could supply, and on the erection of which, to prevent accidents, his own workmen had been for some time employed. Beneath this enormous apartment of canvas, tables were laid for upwards of 600 persons. Notwithstanding the great number of guests, everybody was accommodated, and a more elegant *déjeuner* was, perhaps, never provided for so many guests in so satisfactory a manner. The chair at the cross table was taken shortly before 3 o'clock by Mr. Breton, the Mayor of Southampton. On his right hand were the Duke of Sussex and the French Ambassador, and on his left Lord Palmerston, Lord F. Gordon, and the Duchess of Inverness. There were also at this table Lord Duncan, Sir E. Codrington, Mr. Easthope, and many distinguished persons connected with the town and county. Sir T. Baring, Colonel Forbes, and others were at the different tables. Grace having been said, the company commenced their attack upon the good things before them. In the course of the feast, a number of appropriate speeches were made and loyal toasts given, which were fully responded to by the company; and hilarity prevailed till 5 o'clock, the time appointed for the special train to return to London. His Royal Highness, the Duchess of Inverness, and most of the party who arrived in the earlier part of the day, then retired. His Royal Highness was loudly cheered as he left the marquee, and bowed in return to the spectators. Carriages were in waiting to conduct them to the *terminus*, and at half-past 5 o'clock the special return train was in motion. At 8 o'clock precisely it arrived at Vauxhall, having performed the journey in two hours and a half. At Southampton, preparations were made for fire-works, &c.

RAILWAY COMMUNICATION WITH SCOTLAND.—The report of the government commissioners has been published upon the comparative merits of the projected and competing lines of railway to Scotland, so far as the country south of Carlisle is concerned. The report embraces an examination of

the three following lines, viz.:—one from Lancaster, along the west coast of Cumberland, through Whitehaven to Maryport; another from Lancaster, by Kirkby Lonsdale, and the valley of the Lune, to Penrith, and from thence to Carlisle; and a third from Lancaster to Kendal, and thence up the valley of Long Sleddale, by Hawes Water to Penrith, to form a junction with the proposed railway from the last-mentioned place to Carlisle. The first of these projects is known as the Morecambe Bay or Coast line, and the two latter are inland and closely competing lines. The report of the commissioners on the merits of the Morecambe Bay scheme enters into a variety of interesting details in reference to this magnificent project, and the mode in which it is proposed to carry the embankments for the railway across the Bay and the Duddon Sands. Although these and other operations would be attended with considerable expense, still the commissioners are of opinion, that none of them present what may be termed great engineering difficulties. Notwithstanding the gradients of this route are more favorable than those on either of the inland lines, the report shows by a careful estimate that it would cost each passenger about 4s. more on every journey by the coast railway than by the two inland lines, besides the loss of nearly an hour in time. For these reasons, the commissioners considered it to be their duty to give the preference to one of the inland lines, although they admit that the coast line would offer greater facilities for communicating with Belfast and the north of Ireland. They are, however, of opinion, that if there should appear a probability of the land reclaimed by the embankments across Morecambe Bay and the Duddon Sands realising so large a sum as Mr. Hague, the engineer, anticipates, namely, £1,196,000, or 52,000 acres of land, valued at £23 per acre, that the project might fairly stand on its own merits, apart from any connection with a railway. Of the two inland lines on which the commissioners next report, their merits appear to be pretty nearly balanced as regards population, distance, and gradients; but two formidable obstacles present themselves in both lines, namely, the construction of a tunnel through the Orton Scar on the Lune line, a mile and three-eighths in length; and a similar cutting through the Gate Scar on the Kendal line, which would be two miles and a quarter in length. The material of the Gate Scar consists of a mass of green slate and porphyry; and the Orton Scar consists of the limestone formation; and while the former would have to be pierced 1,200 feet under the summit of the hill, the average depth of the latter appears to be forty-eight feet, and the greatest depth not more than eighty-four feet. Respecting these two works the commissioners instituted the most diligent inquiries, in order to ascertain from practical miners the cost of driving galleries in rock of both of the above descriptions; and although they found the statements they received to vary considerably, yet they generally admitted the much greater facility of working in limestone, such as the Orton Scar is supposed to be, than in the green slate; they, therefore, felt warranted in coming to the conclusion, that supposing the lengths of the tunnels to be equal, and both to be worked from the ends only, the cost and time of forming the Gate Scar tunnel would be at least one half more than that of the Orton tunnel. This difference would, however, in reality, be considerably increased from the difficulty of making shafts in the Gate Scar; while from the conformation of the Orton Hill any number might be sunk. Thus, they are of opinion that the Lune line presents a manifest superiority over that by Kendal, not only in the character of its summit tunnel, but also in the amount of cuttings, embankments, bridges, and viaducts. As, however, the Lune line does not include on its route the important and thriving town of Kendal, the commissioners suggested whether it would not be practicable to effect this object by connecting the two lines, and adopting the most favorable portion of each. Acting upon this suggestion, the provisional committee of the Kendal line requested

the commissioners, after their return to London, to receive and report on a survey made by Mr. Larmer, to connect the line of the Lune and Kendal, a request which their instructions prevented them from acceding to; but they observe at the close of their report, "We have no hesitation in saying, that if a line has been found which would afford the advantage of direct railway communication to Kendal, without either materially increasing the cost of construction or the length of the line between Lancaster and Carlisle, and which would be free from other great defects, it might be more beneficial to the public than the Lune line."

THE EASTERN COUNTIES RAILWAY.—The probable period of opening the Eastern Counties' Railroad to Brentwood, has for some time caused in this neighborhood much discussion, and many bets have been laid upon it; but the advertisement sets the question at rest, by fixing the 1st of July for running the trains between the terminus in High Street, Shoreditch, and Brentwood. The hours of starting from London are to be 9, 10, 11, 2, 3, 4, 5, 6, 7, 8; from Brentwood 9, 10, 11, 12, 3, 4, 5, 6, 7, 8. The line then opened will be about 17 miles, and the accommodation to the public will be considerable, particularly as a train will leave the metropolis so late as eight in the evening, enabling persons to reach Chelmsford by a quarter after 10. The railroad has caused much heart-burning and rivalry among the coach proprietors, and has given rise to the starting of several omnibuses and coaches from Chelmsford. Previously there were three Chelmsford coaches, all belonging to one proprietor, neither of which now travel by the line, but they all continue on the road, though at reduced fares, and they load well. The new coaches and omnibuses also appear to load in a similar manner. There have been many attempts at negotiation between the rival proprietors, but without any amicable result.—*Essex Standard*.

BIRMINGHAM, GLOUCESTER, CHELTENHAM.—We understand that an arrangement has been entered into between the Birmingham and Gloucester, and Cheltenham and Great Western Union Railway Companies, and that the former Company have agreed to complete the line between this city and Cheltenham. We hear that a large number of hands have been placed on the works in the vicinity of Cheltenham, for this purpose.—*Gloucester Chronicle*.

MARYPORT AND CARLISLE RAILWAY.—The first section of the Maryport and Carlisle Railway, namely, from Maryport to near Aspatria (a distance of about seven miles) was to have been opened last Friday, but the ceremony has been deferred for a month. It is stated as a proof of the good feeling with which the landowners in the neighborhood regard the undertaking, that with two or three exceptions, they have agreed that the land required shall be taken as it is wanted, at a proper valuation.—*Railway Times*.

GLOUCESTER AND BIRMINGHAM.—The opening of the Gloucester and Birmingham Railway is now officially announced to take place on Wednesday, June 24.—*Cheltenham Looker-on*.

SLAMANNAN RAILWAY.—The Slamannan Railway is expected to be opened in the early part of next month, and arrangements are in course of negotiation for establishing a passenger trade between Edinburgh and Glasgow by the Slamannan Railway, the Union Canal, the Ballochney, the Monkland and Kirkintilloch, and the Glasgow and Garnkirk Railways.

STOCKTON RAILWAY.—APPALLING ACCIDENT.—On Thursday evening, a frightful accident occurred to the first class train from Stockton. From what we can learn, it appears that a man named Prest was driving a laden wood wagon on the turnpike road from Stockton, and was at the point where the railway crosses the Haughton-road, near Darlington, just at the time when the train was coming up. The gates were closed when the man came up; but, notwithstanding the engine was in sight, and the whistle was sounding, he persisted in opening the

gate, and attempted to cross the line. The person in charge of the gate endeavored to prevent him opening it; but he got through, and was partly across, when the train came up, and a dreadful concussion took place. The three horses in the wagon were killed, the vehicle itself was smashed to pieces, and the timber with which it was laden scattered in all directions. The engine and tender, and several of the carriages, were thrown off the rails, and much damaged; the wagoner as well as the men on the engine and the passengers, we are glad to say, escaped uninjured.—*Yorkshireman.*

ANOTHER FIRE ON THE GREAT WESTERN RAILWAY.—On Monday night, about twelve o'clock, a destructive fire suddenly broke out in one of the luggage carriages on the Great Western Railroad. The train had not started from the terminus at Paddington more than a quarter of an hour, when it caught fire. It consisted of twelve luggage carriages, containing hogsheads of sugars, teas, butter, cheese, hemp, and other goods. Two of the carriages which contained sugars and other groceries, with one laden with hemp, were burnt, containing property to an immense amount. The firemen succeeded in saving the other part of the train. The flames were seen for miles round the country. The fire originated, it is supposed, from some of the sparks flying from the engine amongst the hemp in the front carriage. We regret to state, that the lower class of laborers, who formed the principal portion of the assemblage congregated to witness the conflagration, rendered no assistance, but appeared rejoiced at the destruction, giving vent to their joy by cheers and huzzas. One (a hay-maker) was remarked for his bulky appearance, and a suspicion being entertained that all was not right, he was taken into custody, when, on being searched, it was found he had 75 yards of cloth wrapped round his body. On Tuesday he underwent an examination before Boyce Combe, Esq., the police magistrate, at his residence at Acton, when he was remanded until Thursday.—Last week a similar occurrence took place on the London and Birmingham Railway to the night train, which, however, was conveying passengers as well as luggage. It commenced among the luggage on the top of one of the carriages, and was not discovered until the roof was all in flames. The carriage contained eighteen passengers, who were all got out safe, but upwards of forty bales and parcels destined for Preston, as well as nearly the entire of the carriage, were destroyed.

AUSTRIA.—It is stated in a letter from Vienna of the 3d inst., that the provisional committee of the projected railroad that is to pass through the interior of Hungary, from Presburg to Pesth, and thence to Debrecin, the length of which is to be about 190 French leagues, have now completed all the plans of the line. Baron Solomon de Rothschild of Vienna, the originator and largest shareholder of the railroad of the Emperor Ferdinand, to the success of which the railroad through Hungary will greatly contribute, has placed at the command of the provisional committee a large sum for the purpose of expediting the surveys. The works of the railroad from Vienna to Raab, one of the largest manufacturing towns of the second class in Hungary, are proceeding with such activity that it is expected the railway will be completed before the end of next August. A company has been formed for making a railroad from Prague to Dresden, and the plan has been laid before the Emperor of Austria, by the government of Bohemia, for his approval. A foreign company has offered to construct a railroad between Rome and Civita-Veccchia; by which means the latter town would become the port of Rome. It is feared, however, that the proposition will encounter strong opposition.

BASLE AND STRASBURG.—Some inhabitants of the communes through which the Basle and Strasburg railroad runs, have recently attempted to stop the workmen from making the embankments, &c., and have used much violence towards them. The authorities, however, have interfered with promptitude, and have restored order in most of the localities.

"THE LEADING JOURNAL OF EUROPE."—The *Times*, of Thursday last, was a perfect literary curiosity. We remember the first appearance of that paper as a double sheet, and the excess of wonder it then excited; on the present occasion, it consisted of two double sheets, or 16 folio pages, furnishing as much reading for five-pence, as could be comfortably got through in a couple of days!! The supplement, as the proprietors modestly called it, was gratuitous. An immense influx of advertisements, now daily on the increase, was the cause of this step on the part of the proprietors, and we have good reason for believing that of these, sufficient to fill another paper equally large were kept back for want of room!! We can have no hesitation in asserting, that the *Times*, as an organ of communication between the commercial world and the public, stands immeasurably alone. All others follow longo intervallo.

GRATUITOUS COPIES

of our Journal have been forwarded to a number of Individuals interested in some Patent, or Invention, of which notice has been taken in our number of to-day.

TO CORRESPONDENTS.

We shall, at all times, be ready to ANSWER QUESTIONS that may be put to us, relative to any of the subjects indicated in our title; and questions put during the current week, will be replied to either the same, or following week.

"THE INVENTORS' ADVOCATE, and JOURNAL OF INDUSTRY," may be forwarded, postage-free, to all the under-mentioned places:—

Antigua	Demerara	Montserrat
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Bremen	Halifax	St. Domingo
Buenos Ayres	Hamburgh	St. Kitts
Canada	Heligoland	St. Lucia
Caracas	Honduras	St. Vincent's
Cartagena	Ionian Isles	Tobago
Cephalonia	Jamaica	Tortola
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"THE INVENTORS' ADVOCATE" is published every SATURDAY MORNING, at 7 O'CLOCK; if, therefore, our Subscribers do not receive their copies regularly from their Newsmen, the fault never rests with us.

For the convenience of persons residing in REMOTE PLACES, the "INVENTORS' ADVOCATE," will be regularly issued in MONTHLY PARTS, stitched in a handsome wrapper. PARTS 1 to 11, are now READY.

ADVERTISEMENTS should be sent in not later than Thursday Evening.

"J. W. Walker," Huddersfield.—The Attorney General has not the power of extending the time limited for enrolling a specification AFTER the patent has been sealed;—should you therefore require more time to specify, you must obtain a new patent.

"D. W. H."—The term of the patent commences from the date.

"An Enquirer."—Most decidedly, if you can prove the company to be regulated by Act of Parliament, but not otherwise.

"G. Grimstone."—You had better come to some arrangement with the parties, as legal proceedings might be injurious to both.

TITLE AND INDEX TO VOLUME II.

A copious and carefully-arranged INDEX is preparing for the SECOND VOLUME of the "INVENTORS' ADVOCATE," and will be ready in a few days. At the same time will be published, the SECOND VOLUME of the work, strongly and handsomely bound. A few copies of the FIRST VOLUME yet remain on hand.

TO INVENTORS.

ALL PERSONS who may be desirous of TAKING OUT PATENTS, or of bringing VALUABLE INVENTIONS into USE, are requested to APPLY to the PROPRIETORS of "THE INVENTORS' ADVOCATE," (DELIANSO CLARK & CO.) at their "PATENT AGENCY OFFICE FOR ALL COUNTRIES," 39, CHANCERY LANE, where they may be consulted, daily, relative to the PATENT LAWS of GREAT BRITAIN, and ALL OTHER STATES.—(See ADVERTISEMENT on the last page of the present Number.)



THE INVENTORS' ADVOCATE, AND JOURNAL OF INDUSTRY.

SATURDAY, JUNE 27, 1840.

We have from time to time animadverted on the inactivity of our government in all matters relating to improvements in the arts and sciences, and to the practice of leaving important national works to the chance and control of private speculation. A similar subject has lately occupied much attention in France, in reference to the extent to which that government should interfere in the proposed construction of railways.

France has hitherto done little or nothing in the formation of railroads, and great delay has been occasioned in determining upon what system they should be conducted. The subject is now taken up with energy, and lines of railway have been projected connecting the principal towns in the kingdom with the frontiers; but as private capitalists cannot be found to undertake, on their sole responsibility, the execution of such extensive works, it becomes necessary that they should be done either at the cost of the nation, or that the government should offer assistance to induce capitalists to engage in the speculation. The latter of these plans having been adopted, the next question was, in what manner the assistance should be offered. The project of the government, was to offer to take a large number of shares in the com-

panies to be formed for carrying on the proposed works, and that the private shareholders should have preference to the state in the payment of dividends. The commission to which the Chambers of Deputies referred the whole question, agreed with the government in the principle of leaving railroads to be executed by private enterprise, aided by the state; but instead of the plan of taking shares, they recommended that the inducement offered to private companies should either be in the form of a guarantee of a minimum of interest, or the grant of a loan at a low rate of interest. This recommendation has been acted on, and both of those methods have been adopted; the guarantee of a minimum of interest having been applied to some of the projected lines, and a loan to others. In one or two short lines, the government will undertake the entire charge of construction.

Though the report of the commission appears favorable to the principle of leaving the construction of these important public works to individual management whenever practicable, yet it must be observed, that the proposed system for the French railroads is altogether different from the system, or rather the want of system, practised in this country. Instead of trusting to individual speculation in the choice of lines, as in England, the French government specifies those that are to be undertaken; and from the nature of the existing police and customs regulations of the country, it must be well understood that the government will exercise control in the management when completed. This regulation of the lines of road, with a view to the general benefit of the community, and the implied superintending control of the government, remove most of the objections that exist to the formation and management of railways by individual enterprise and speculation alone.

The assistance to be directly or indirectly rendered by the state in the formation of the railways, will also give the government an additional right to interfere in their management. The situation of the French railway companies will, indeed, be very different from that of the railway companies in England, and so far from exercising an unlimited control, and enjoying the exclusive privileges of a monopoly, they will in all probability be subjected to a troublesome and an injurious interference. An idea may be formed of the extent to which it is proposed by some to carry this system of interference, from the

proposition, seriously made in the Chamber of Deputies by the distinguished M. Arago, to restrict the directors to the purchase of locomotive engines of French manufacture. This proposition, though rejected as a part of the law respecting railways, was nevertheless referred to the commission of Customs, with the view to the imposition of such a duty on English steam-engines as may amount to a prohibition. Under such a restrictive superintendence, the railway companies of France are in no danger of becoming insolent from too much power; and the preference given to private management, when so controlled, affords no argument in favor of entrusting the execution of important public works entirely to the chance and to the control of private speculation.

The plan adopted by the French government of guaranteeing a minimum of interest of three per cent., seems admirably adapted in every respect to the promotion of public works attended with considerable risk. Presuming that the works so undertaken be calculated to benefit the public, the nation would gain an advantage, even supposing the undertaking to fail as a trading speculation and the government were called on to make up the deficiency in the dividends. Any feasible undertaking, supported in this manner, would be certain to find abundance of capital for its prosecution, and as no interest would be payable until the works were completed and in operation, the probable loss to the public would not be worth consideration, when compared with the positive advantages to be derived.

THE APPLICABILITY OF ELECTRO-MAGNETISM AS A MOVING POWER.

A new motive power is now struggling to supersede the use of steam, and promises to effect changes nearly as great in the present mode of propelling machinery, and in the means of locomotion, as have been produced by steam itself, since the end of the last century. Whether the attempts that are assiduously making to render electro-magnetism available as a moving power, instead of steam, will be attended with success, time alone can positively determine; but as the principle on which those attempts are founded, is sound, we confidently believe that the hopes they have raised will be realised. There is no object, indeed, to which the attention of the scientific world is now directed, that appears so fraught with important consequences to the interests of mankind, and the development

of scientific truths, as the science of electromagnetism; it, therefore, becomes essential for every one to know the elementary principles on which it is founded. Our present object, however, will be confined to showing the action of that peculiar power generated in iron by electricity, and to consider the probability of its being rendered available as a prime mover of machinery.

It is only twenty years since the action of a current of electricity in varying the direction of a magnetic needle was discovered by Professor Oersted. This discovery had apparently little reference to practical purposes, though it soon led to the development of a numerous class of phenomena of the most interesting character, which the inventive genius of man perceived might be converted to his use. The researches which Professor Oersted's discovery promoted, quickly disclosed the fact, that a current of galvanic electricity, passing in a certain direction round a bar of iron, communicates to it instantaneous magnetic power, and that this power is instantaneously removed when the connection with the galvanic battery is interrupted. The magnetic power communicated by this means, it was found, far exceeded that of any permanent magnet; and electro-magnets have been made capable of sustaining upwards of 500lbs. The knowledge of these facts soon gave rise to the idea, that by the rapid transference of the power from one magnet to another, a motive power might be gained of great efficacy, at little cost. For instance, if a bar of iron be suspended freely on a pivot, near one end, and the upper and shorter end be exposed to the action of two electro-magnets, to each of which attracting power is alternately given and removed, it is clear that, supposing the magnets to be sufficiently near and powerful, the iron, exposed to their action, will be attracted from one to the other as quickly as the power is alternately transferred, by breaking and renewing the connection between each magnet and the galvanic battery. Though the space moved through by the upper end of the bar must necessarily be small, as it must be confined within the range of the magnets' attraction, yet the motion of the lower end may be extended to any reasonable range, by increasing the length of the bar. We should in this manner obtain a reciprocating action like that of the beam of a steam engine, and if the upper end of the bar be enlarged, so as to present a large surface to the action of a combination of powerful electro-magnets, we may

readily conceive, that in this manner, a motion may be gained capable of being usefully applied.

Another curious property of the electro-magnet is, that its poles change from north to south, when the communication with the negative and the positive poles of the galvanic battery is changed. This property has also been made available in the attempts to construct electro-magnetic engines. For instance, if in the reciprocating engine we have already described, the electro-magnets were brought to act against permanent steel magnets, instead of against a surface of soft iron, and the poles of the electro-magnets were changed each time their connection with the galvanic battery was broken, then, in addition to the attracting force of the variable magnets, the attraction and repulsion of the permanent magnets would be exerted every time the poles of the former were changed. The motion of the bar itself can very readily be directed to alter the position of the wires, so as to the break connection and change the poles of the battery; therefore, such an engine would become a self-acting machine, and it would continue to move with great rapidity as long as the chemical action of the battery continued.

The form we have here supposed, is the simplest in which the attracting power of electro magnetism can be employed; and if the power obtained from the magnets were of sufficient energy, this simple self-acting machine might become extremely valuable. The usual plan of making these engines, is to give them a direct rotary motion. This may be done by arranging the magnets round the periphery of a wheel, and by placing the reacting magnets round a hollow cylinder in which the wheel revolves. Great accuracy is, however, required in adjusting the magnets in the proper positions, otherwise they would at times be acting against each other, and stop the motion.

The possibility of applying electro-magnetism as a moving power, is no longer a doubtful question. It has been done; and within ten years of the discovery of the principle, models sometimes set in motion by its power were at work. The question now remaining to be solved is, whether this power can be rendered practically useful, so as to be advantageously substituted for that of steam. We shall, therefore, offer a few brief considerations of the difficulties to be yet overcome before it can be efficiently applied as a moving power.

The principal difficulty that presents itself in attempting to apply the attractive power of electro-magnetism, arises from the very limited sphere of its attraction. A magnet that will sustain a weight of 100lbs., when in contact, is comparatively powerless at a distance of one-eighth of an inch. The space, therefore, between the magnets that transfer the action from one to the other, must necessarily be very minute, otherwise the greater part of the power will be lost; even at a distance of one-hundredth part of an inch the magnetic power is very considerably diminished. It will thus be perceived, that an almost unattainable degree of accuracy is necessary to ensure to an engine of this construction its full working power. In permanent steel magnets, the centres of attraction are situated in a point within the steel bar at a short distance from either end; but in electro-magnets, the attraction seems to be combined in innumerable minute centres on the surface of the magnetised bars. Now, as the attraction of all central forces diminishes as the squares of the distance, the diminution of forces proceeding from inconceivably small points on the surface must increase in a prodigious ratio, compared with that of a force concentrated at a greater distance. One object to be attained, therefore, before the attracting force of electro-magnetism can be usefully applied, in any method like those hitherto adopted, seems to be a concentration of the attracting power, in order to extend the sphere of its operations.

We must not in the present infant state of the discovery, and of its application as a moving power, be in the least discouraged by any difficulties that present themselves. Enough has already been done to show that the power exists, and that it is capable of being applied. Its extent seems to be unlimited, whilst the cost of its production is comparatively trifling; and we feel confident that human ingenuity will eventually find the means of rendering it subservient to the purposes of man.

NEW INVENTIONS.

A NEW WATER DRAG.

M. Charrier, a French surgeon, has invented a drag for rescuing drowning persons who have sunk under water. The objection to the present drags in use, independently of the insufficiency of their action, is, that they are liable to injure the body, and tear the flesh of the drowning person. The instrument contrived by M. Charrier to remedy this defect, and at the same time to increase the efficacy of the drag in finding the body, is formed on the principle of the drags used in drawing sand from

the beds of rivers. It is shaped like a hoe, and is about two feet long. It is formed of two bands connected together by cross wires, and it is curved so as to receive the body of a man. Another hoe, of nearly the same shape, is fixed by a hinge near the bottom; so that, when it closes over the first one, it holds anything within it tight, and whether the body be seized by the trunk, or only by one of the limbs, secures it until drawn out of the water. This new drag is said to be extremely light and manageable, and is able to bear a weight of 300 lbs. In addition to this drag, M. Charrier has invented others of a more complicated character, to render the means of saving human life more perfect. He has also invented what may be termed a *finder*, which is an instrument something resembling a pair of pincers, to be used in searching for lost bodies.

NEW APPARATUS FOR PROPELLING STEAM-ENGINE BOATS.

In the new apparatus, invented by M. de Jouffroy, of Paris, for propelling steam-engine boats, the wheel-paddles are superseded by paddles that open and collapse, and move parallel with the direction of the vessel; the paddle in its forcing action expands, and in returning, collapses or doubles, and becomes of the thickness only of the two pieces of wood or metal of which it may be formed; this is effected by means of joints or hinges in the centre of each paddle; as two such paddles are placed on each side of the vessel, the motion and power is continued, and there is no retarding power, like that of wheel floats when rising out of the water.

A NEW MANURE.

Considerable interest has been excited by the trial of the newly-introduced manure—nitrate of soda. The substance is, as its name implies, a compound of nitric acid and soda, and in many respects is similar to common nitre (nitrate of potassia.) It has been chiefly procured from Hindostan, where it is found in extensive natural beds; in the spring it was sold at 18s. a cwt., but it has now reached 22s., and even in some places, we believe, a higher figure. It is sown by the hand, early in spring, at the rate of a cwt. to the acre; and as yet it has only been applied to grass lands, and, in a few cases, to oats. Although in a crystallized state, the crystals are very small, and in color and appearance they very much resemble dirty herring salt. From its metallic base and large proportion of oxygen, the nitrate of soda weighs well to its bulk, and indeed a couple of cwt. may be put in a common wheelbarrow. It has thus the advantage of being very portable. When sown upon grass lands, its effects are said to be most rapid. Where tried, the rest of the field has been either left untouched or manured with bones or lime, and within a few days the land which had received the quickening influences of the eastern manure took a start in vegetation, which it has fairly kept ever since. Where bones are used as a top dressing, cattle cannot be induced for long after to touch the grass, but the application of the nitrate of soda is said to have no such effect. The powerful acid which enters into its composition, appears to be an effectual extirpator of grubs, snails, and other ground insects, the source of so much annoyance and loss to the farmer. Like other salts, the nitrate of soda is a powerful agent in attracting moisture from the air, and the grass on which it is sown has been observed to be "impearled with dew" when other fields were hard and dry. Probably this curious fact may have had no small influence in stimulating vegetation in such a season of drought as the present. These are the qualities ascribed to this manure, the most important of which is undoubtedly its power of producing food for stock early in spring. An extended trial of it will be necessary before any proper judgment can be pronounced. It is as yet unknown whether its effects are lasting; and until this, of itself, is ascertained, caution must be used. It may be easily adulterated, but of course this will be got over by tests; a simple one will be to apply a red

hot cinder to a small quantity, which, if pure, will give off oxygen so rapidly as to produce, almost instantaneously, full combustion.—*Dumfries Courier.*

NEW ROTARY ENGINE PUMP.

We have lately seen a little hydraulic machine patented by Mr. J. S. Worth, of Manchester, called the "Imperial Rotary Engine Pump." A circular box of seven inches in diameter, by about two inches thick, a wince handle, a suction tube, with a valve at the bottom, and a delivery pipe, constitute the whole exterior of the machine. The principle involved is to obtain a *perfect vacuum* in the box, by means of two revolving valves, the action of which we shall describe more particularly when we have an opportunity of seeing the drawing of the interior. It acts both as a lift and a force pump; its power of lifting being of course limited to the height to which water will rise *in vacuo* (say 28 to 30 feet), and its forcing powers restricted only by the extent of the power employed, and the strength of the materials. This specimen is fitted up as a pump for domestic purposes; it may be screwed to the wall, or other convenient place in any part of the house, and will draw water from a well or cistern anywhere on the premises, and force it to the uppermost stories of the highest houses, with perfect ease, delivering at the rate of, we understand, 25 gallons a minute. It is applicable to all the purposes for which hydraulic machines are used—the larger size for the pumping of mines. It is also capable of being used as a pneumatic engine for drawing the foul air from the deepest recesses of coal mines, and even in this point of view alone, the saving of life which it is calculated to accomplish renders it a *desideratum* in mining districts. It is now exhibiting in the Adelaide Gallery, Lowther Arcade, and at the Polytechnic Institution, Regent Street.—*Railway Mag.*

VARIETIES.

France.—The sitting of the French Academy of Sciences, on the 23d inst., was almost entirely occupied with the following nominations:—M. Pelletier, the inventor of sulphate of quinine, was elected a member of the Academy; the other candidato, M. Franceur, had thirteen votes. M. Duhamel was nominated a candidate for the office of permanent examiner at the Polytechnic School.

France, Transatlantic Steam Navigation.—The project of law for the foundation of a line of transatlantic steam ships, was agreed to on Saturday last, in the Chamber of Deputies, by a majority of 212 against 23. It was understood that three or more ships should be built for the communication between Havre and New York; and that others are to be constructed for the traffic between Bordeaux and Marseilles, and the United States. In the discussion on this subject, M. Arago again enforced the necessity of giving a preference to French steam-engines for the transatlantic steam ships. The president of the council, in reply, would not pledge himself to adopt the proposition, but merely declared that the government would do all in its power to encourage French manufactures.

New Lighthouse.—A notice to mariners has just been issued from Lloyd's, intimating that "the Tunisian government have erected on Cape Carthage, at the entrance of the Gulf of Tunis, a lighthouse, which will be regularly lighted every night for the future. It is a light which revolves every three minutes."

Continental Machinists.—The principal Continental machinists are Messrs. Cockrocks, Seraing, in Belgium; Messrs. Fairburn, and Messrs. Kennedy and Co., in Belgium and Austria; and Messrs. Dyer and Son, at Abbeville, in France. It is also stated that Messrs. Gregs are establishing a machine-making establishment, with the view of manufacture, in Sardinia.

The Flax Crop.—A stalk, about two feet in length, being a sample of fifteen acres of a most promising crop, grown by W. G. Irwin, Esq., of Annagola House, county of Armagh, has been forwarded to this office. We are happy to learn that the crops generally in that neighborhood, especially the potato crop, are equally forward and luxuriant.—*Newry Telegraph.*

Light at the Entrance of the Avon, Bristol Channel.—The light at the newly-erected lighthouse at the entrance of the river Avon, is to be continued every night from sunset to sunrise. The lighthouse is on the north-eastern side of the entrance of the Avon, and the light is a fixed white, burning at an elevation of 73 feet above the level of high water spring tides.

Foreign Lotteries.—The *Moniteur* offers to the public the following caution:—"Persons residing in Germany, and calling themselves bankers, have long advertised pretended sales, by way of lottery, of domains situated in foreign countries, issuing pompous prospectuses, with plans of the estates, &c. Several persons having become victims to these culpable manoeuvres, receiving nothing but tickets without any value for the money, the government feels itself called upon again to warn the public against these pretended lotteries, which are prohibited by the laws of France, and are, in reality, snares for the inexperienced and avaricious."

Testing the Strength of Anchors.—A very interesting process has just been completed in the Woolwich dock-yard. All the anchors made for the use of the navy, whether constructed in her Majesty's dock-yards, or supplied by contract in various parts of the kingdom, are brought to the dock-yard at Woolwich, where their strength and consequent safety are ascertained by applying to them the force of a powerful hydraulic pump. This powerful engine consists of six pumps, worked by twelve men, acting upon a piston in a large iron tube, having a safety valve, which opens when the pressure applied exceeds 150 tons weight. Eight anchors were tested on this occasion, two from Chatham, weighing 75 cwt. each, suitable for ships of 74 guns; two from Sheerness, two from Portsmouth, and two from Plymouth dock-yards. The operation is performed by placing a strong collar, made of the best iron, six inches in diameter, round the fluke of the anchor. An iron chain cable, about 30 yards in length, and two and a half inches in diameter, is then attached to the engine and to the anchor; and if the latter resists a strain equal to 51 tons, the test of one of 75 cwt., without its appearing injured, it is considered perfectly safe.

Post-office Regulations, Sheffield.—Arrangements have been entered into for the conveyance of the London mail to this town, (Sheffield,) by railway, from and after the 17th inst. The bags will arrive about eight in the morning, some two hours later than the London mail arrives in Liverpool, although the distance by railway is twenty-five miles further than from London to Sheffield. Barnsley, Wakefield, Leeds, and the towns north of Leeds, will have occasion to complain of this arrangement. The London mail might, with a slight alteration, be in Sheffield by five o'clock in the morning. The delay of the midland mail arises from the London letters being taken to Birmingham, and there detained an hour, whereas if the Birmingham letters for the towns on the Midland line of railway were sent up to Hampton in Arden, or Coventry, and were there taken up by the train coming direct, through to Leeds, three hours time might be saved.—*Sheffield Iris.*

Sculpture.—We stated some months ago, that Mr. Maxwell, of Everingham Park, Yorkshire, had commissioned Signor Bozzoni, a young and talented Roman sculptor, to execute a work of considerable magnitude, the subject of which was to be confined to representation of the principal events connected with the life and death of our Savior, in bas-relief, and the figures of his

disciples, the Apostles, of the size of life. Two of these latter, the statues of St. Peter and St. Paul, we noticed at the time as exhibiting very great merit. A third, that of St. John, is just arrived from Italy, of which the *Diario di Roma* and other Roman papers speak in the most flattering terms. We shall have an opportunity of seeing it ourselves in few days, when we may, perhaps, give our own opinion of its claims to the favorable judgment pronounced upon it by the Italian cognoscenti. The sculpture and architecture it is to illustrate and embellish, will cost our countryman, Mr. Maxwell, thirty thousand pounds.—*Post.*

Fire Escapes.—The following motion is to be brought forward by Mr. Lott at the next Court of Common Council:—"That a premium be offered by this corporation for the best model or design for a fire-escape; that it be referred to the committee for general purposes to fix the amount of such premium, to select a competent number of scientific persons to award the same, and to direct the construction of an adequate number of such machines; and that one of them be placed in an accessible position, and constantly ready for immediate use at each of the police and fire-engine stations of this city."

How to keep Moths from Woollen Cloths.—M. Chapel, a botanist of Montpellier, has communicated to the Agricultural Society of that place, that he has succeeded in acclimatising the plant which produces the root called *vetiver*, used for keeping moths away from woollen cloths. This plant (*Andropogon squarrosus*) is a native of India, but thrives well in the south of France: it stands rather more than a foot high, and its leaves afford wholesome and agreeable fodder for cattle.

Ottoman, of Papier Machée.—A singular article of furniture has been exhibiting in Birmingham during the last week, which has the advantage of being equally beautiful and novel. It is an ottoman of papier machée, intended for the boudoir of the Duchess of Sutherland. The back of the sofa is richly carved (a process for which papier machée appears to be as well adapted as wood of the finest grain), and the seating, pillows, cushions, &c., are furnished in a bright striped crimson cloth, which gives to the whole a very superb and elegant appearance.—*Staffordshire Examiner.*

Spontaneous Combustion.—Mr. Marsh, chymist, connected with the Royal Arsenal, recently discovered that it is an invariable rule with iron which has remained for a considerable time under water, when reduced to small grains, or to an impalpable powder, to become red-hot, and ignite any object with which it may come in contact. This he experienced by scraping some corroded metal from a gun, which ignited the paper containing it, and burnt a hole in his pocket. The knowledge of this fact may be useful in accounting for spontaneous fires, the origin of which has never been traced.

Antiquarian Discovery.—A very interesting geological specimen has been dug from the Granby stone-quarries; it consists of a *Plesiosaurus dolichodeirus*, embedded in blue lias. This antediluvian reptile measures, from the upper vertebrae of the neck (the head not being yet found) to the tail, about 11 feet, and across from paddle to paddle five feet.—*Stamford Mercury.*

THE PROPOSED NEW LONDON LIBRARY.

On Wednesday, a public meeting was held to adopt means for the establishment of a new public library in London, consisting of an extensive and valuable collection of works in general literature, the subscribers to which shall have the privilege of borrowing books from the institution for the purpose of reading them at home. It had been announced that Lord Clarendon would preside on the occasion, but in consequence of his Lordship's absence, Lord Eliot was voted into the chair.

Mr. Carlyle, Mr. Millman, Mr. Cornwall Lewis, Mr. R. M. Milnes, Lord Monteagle, and other gentlemen attended; but the number of persons present was not very great, though the room in which the meeting took place, being small, was filled. The noble chairman having in a few words stated the object for which the meeting had been convened, Lord Monteagle and the rest of the above-named successively addressed the assembly, strongly urging the necessity of the establishment of the proposed library; and several of them stated that they knew, from their own experience, that the want of such an institution was much felt by those engaged in literary pursuits. It was observed, that there were on the continent, and even in different parts of this kingdom, similar institutions already in existence, the operations of which had been most successful and beneficial; and it was deemed high time that the advantages connected with them should at length be enjoyed by the vast multitudes in this metropolis, who, actuated either by the hope of profit, or the desire of knowledge, were daily employed in the occupations of literature. The new institution is intended to occupy a middle position between the present circulating libraries and the library of the British Museum, combining the advantages of both. Like the latter, it will contain an extensive collection of really good and useful works, which, in imitation of the plan of the former, will be circulated among the subscribers to be read at their own residences.

A resolution declaratory of the necessity of establishing the proposed library was put, and immediately assented to by the meeting; and it was next resolved that the institution should be located in some central situation, such as Charing-cross, and that the subscriptions thereto should be moderate in amount.

The meeting having voted thanks to the noble chairman, then separated.—*Times*, of Thursday.

[The Editor of the "Times," yesterday, revokes his good opinion of this Library, and sets it down as a humbug.]

WRECK OF THE ROYAL GEORGE.

The great explosion announced in our last, took place on the 22d, being the same day, and very little later than the hour stated. The effect was beautiful, and the intention of firing it having been generally known, it was witnessed by a vast number of spectators, notwithstanding it blew a stiff breeze, which deterred many from going out to Spithead. Colonel Pasley came about 1 o'clock, and at half-past 1 the great cylinder, loaded with 25½ barrels, or nearly 2,300lb. of gunpowder, with the voltaic conducting apparatus attached to it, was raised out of a launch alongside by the derrick of No. 5 lump, and lowered into the water so as to rest a little above the surface, where it remained suspended by the bull-rope of the derrick. Hall was then sent down, and made fast a down haul rope, with a single sheave block, to a solid piece of timber, which he found at the bottom of the crater produced by the morning's explosion. He came up, and handed over the end of this rope, which was attached to the cylinder, to which a couple of pigs of ballast were added, to make it sink more easily; after which it was lowered from No. 5 lump, and accompanied in its descent by Hall, who had a line attached to it in his hand, and who made signals to the men above, either to lower or occasionally to raise, or to move the cylinder to the eastward or westward, as required, until he guided it into its proper place, where he lashed it to the timber before-mentioned. At about a quarter past 2 o'clock he came up, and reported that it was properly placed. Whilst being lowered, the voltaic conducting apparatus attached to the cylinder was veered out, and the other end of it was taken on board No. 4 lump, and placed near the voltaic battery, where Lieutenant Symonds now stationed himself. No. 5 lump was then re-

moved to the distance of 70 or 80 yards, to the southward of the spot where the cylinder had been let down. All being now ready, Colonel Pasley, who remained in that lump, ordered his bugler first to sound the "preparative," and in about a minute afterwards "the fire." At that moment Lieutenant Symonds completed the circuit with the voltaic battery, and an immediate explosion took place, the shock being felt and the report heard at the same instant. In a few seconds afterwards, the surface rose three or four feet in a circle of moderate size, from the centre of which almost immediately afterwards, a splendid column of water at least 50 feet high, and of a conical form, was thrown up, beautifully sparkling in the sun, which was hailed by the hearty cheers of all the workmen employed, as well as of the numerous spectators, and soon after several fragments of wreck came floating up to the surface, which proved to be the lower part of the mainmast. The form of the column of water was not so regular as on former occasions, owing to the strong wind which acted upon it. When it fell down again, clear circular waves spread outwards from the centre, making a commotion at the surface, and causing No. 4 lump, which was nearest to the explosion, to pitch a good deal. Soon after this, the mud from the bottom came up, blackening the same circle of water, which spread outwards, discolouring the surface as it extended, and at the same time stilling the swell of the sea for a space of perhaps 200 yards in diameter. A great number of small fish came up, dead, as on former occasions, which were picked up by the boatmen. More than 50 yachts or large sailing boats came out, whose decks were covered with spectators, among whom were a great number of ladies. The two Admirals and the General commanding the garrison, with a great number of naval and military officers, and most of the officers of the dockyard, with their families, were present, many of whom went on board the two lumps to have a better view of the operations. The deck of the Success frigate was also crowded with spectators. The Bishop of Norwich, the Astronomer Royal, and the Russian Consul-General were present.

SCIENTIFIC MEETINGS IN LONDON, FOR THE WEEK COMMENCING JUNE 29, 1840.

Monday.	British Architects.....	8 P. M.
Tuesday.	Instit. Civil Engineers	8 P. M.
Friday.	Botanical Society.....	8 P. M.
Saturday.	Mathematical Society	8 P. M.

Most of the other Scientific Societies have closed until November next.

REPORTS OF SCIENTIFIC MEETINGS.

ROYAL INSTITUTION.

June 12th. Friday Evening Meeting.

Mr. Carpmael delivered a lecture "On the manufacture of cards for carding cotton, wool, &c." These cards are composed of certain lengths of wire, bent in a certain direction, and fixed into a surface of leather, similar to a wire brush. By means of these cards, it has been estimated that three hundred millions of pounds of cotton are annually carded by this process. The principle upon which the wire card acts has been already described by Mr. Cowper in a former lecture, when treating of the manufacture of cotton.

Mr. Carpmael then gave a brief sketch of the progress of carding cotton from an early period, and since its introduction into this country. The process consists in procuring wire of uniform thickness, and cutting it into proper and equable lengths, these pieces to be afterwards bent into the requisite

shape, and then fixed into the leather. The old process for cutting the wire with shears was shown, and the instrument employed for retaining the wire during the performance of the process; these instruments were constructed in a very rude manner, and were only capable of cutting a single wire of the necessary length at a time. The improvements in machinery of recent date have overcome this difficulty: the various tools were exhibited and explained to accomplish this end. The wires having been made, the next process was to fix them in the leather; for this purpose the workmen, with the assistance of hand and eye, pricked the holes in the material, while others introduced the wires; by this means, an expert workman could set 30 in a minute. The sum paid the present setters by hand for setting 2,600 wires, is one penny, and a dexterous workman may earn in this department from three to four shillings per week; this kind of work is generally accomplished by boys and girls.

A machine constructed by Bennigoo was explained, which cuts off the proper length of wire, bends it to the required angle, and feeds itself with wire, thereby saving a great deal of hand labor. In regard to pricking the holes in the leather to receive the wires, a series of punches were placed in a press with a counterpart to receive the points; as soon as the leather was perforated, the machine placed the wire in the holes. These inventions were in use previous to 1810; the last is still used for making pointed wire cards. Mr. Dyer, an American, in 1810, introduced a machine which would cut the wire, bend it, and finally insert it in the leather, which finishes the card. With Mr. Dyer's machine 130 or 140 staples can be fixed in the leather in the space of a minute. It is to this gentleman, likewise, the method of stripping and planing the leather is due, and this is of the greatest importance in the construction of cards, for if the surface of the leather were not uniform, the carding extremities of the wires would be uneven, and would, consequently, very materially interfere in the process. The next invention of importance in this kind of manufacture, was the substitution of sheet India rubber in the place of leather, into which the wires are inserted. The great advantage of caoutchouc is its well-known elastic property, which enables the wires readily to regain their elasticity when the pressure is removed; and cards so constructed are employed with great benefit in the carding of cotton, wool, and raising the surface of cloths: to overcome the longitudinal elasticity, a piece of cloth is fixed by means of India-rubber cement to the back of the card; another advantage of cards so constructed is, that the workmen may treat materials with this instrument, which would be spoiled or destroyed by cards of ordinary manufacture. Allusion was made to the *teasels*, which were abundantly cultivated for the purpose; they can only be used for a few hours, as they imbibe moisture, and do not retain the requisite degree of rigidity. A hand teasel was shown, composed of a number (7 or 8) heads of the *Dipsacus pilosus* bound together.

To give an idea of the quantity of material used in a given time by Mr. Dyer's machine, Mr. C. stated that 48,000lb of wire are cut up weekly in making the cards, and 3,000 or 4,000 hides of leather made into strips to receive the wire. He concluded the lecture by explaining Mr. Dyer's apparatus, which was set in action, and deposits, when properly and carefully attended to, between 400 and 500 pieces of wire in the India-rubber in a minute.

To a popular audience, we know of no subject more uninteresting than a mere dry detail of delicate and complicated apparatus; we regret to state that in the present lecture we were obliged, nay, even compelled to listen, and remain in no degree edified, either by the lecturer's delivery, explanations, or descriptions. We could have wished that a more interesting and popular subject had been chosen for the last Friday evening meeting of the season, especially as we were inclined to think that the lecturer was not altogether master of his subject; such a lecture would be admirably adapted for a provincial Mechanics' Institution, in a large cotton manufacturing district; but we do not think it altogether

adapted to occupy the time and attention of the visitors to this hall of science and research.

At the conclusion of the lecture, Mr. Faraday stepped forward, and announced that according to their Charter and Act of Parliament, this was the last meeting of the season; and stated that it was not usual for him to be absent from the lecture table on the occasion; but owing to various circumstances he had been prevented doing his usual duty.

On the library table were exhibited the following articles:—Elastic Boots and Shoes, from Mr. Dowie; Bullets made by compression instead of casting; Specimens of Materia Medica, Plants, and Preparations, from Mr. Batty; Illustrations of Dyar and Hemming's manufacture of Carbonate of Soda; Models of Bielefeld, in papier maché, and the Pyrenees, mapped by the Anaglyptograph, from Sir Thomas Mitchell.

LINNAEAN SOCIETY.

June 16th. The Bishop of Norwich, President, in the Chair.

The last meeting of the season was held this evening. The secretary announced that several fellows of the society had presented a portrait of the late secretary Dr. Boott, which was exhibited. Mr. Thomas Nightingale exhibited a series of drawings of plants from the Indian Islands. Mr. William Pamplin jun. laid upon the table specimens of *Orechia militaris* and *Ophrys tephrosanthos* from Berkshire. There was likewise exhibited the fruit of a *Strychnos*, from Natal, Southern Africa, collected by Dr. Ferdinand Krauss, the recent traveller and explorer in the interior of that country; we were privately informed by Dr. Krauss, that the natives where it is found eat the pulp around the seed with impunity, which cannot, however, be done with any other of the known species. There was likewise on the table a specimen of the fruit of *Garcinia Mangostana*; a kind of soap made from the *Nux Moschat*; and a seed vessel of *Zamia* from the Cape. A communication was read from Mr. J. O. Westwood, being a description of a new species of coleopterous insect from South America, collected in that country by Mr. Myers. The continuation and conclusion of the first part of Mr. John Smith's elaborate paper on the arrangement of the genera of ferns, was then read.

The president then announced that the following gentlemen had been appointed vice-presidents for the ensuing year: Messrs. Robert Brown, Thomas Horsfield, A. B. Lambert, G. Forster; and that the third part of the 18th volume of the Society's Transactions was ready to be delivered to the fellows.

The Society then adjourned until November next.

METEOROLOGICAL SOCIETY.

June 9. Lieut. Morrison, R. N., in the Chair.

After the minutes of the preceding meeting had been read and confirmed, the secretary submitted various meteorological tables, which were duly compared, and the various curves of the linear ranges of the barometer at London, Dulwich, High Wycombe (two observers), Thetford and other places, showed an admirable uniformity, each indicating the exact time of each rise and fall, and showing the movement of pressure to pass over the kingdom with an almost the same velocity.

George Leach, Esq., then submitted a series of observations on the effect of temperature on the various mountings of thermometers. Mr. Leach placed two thermometers precisely under the same circumstances, and freely exposed to the sun's rays, one mounted with glass, having the scale engraved on a glass tube, and the other mounted in the usual way on box wood; both were horizontal and self-registering thermometers.

The following observations are selected to show the effects of radiation from the box wood mounting.

MAXIMUM DEGREES IN THE SUN.			
1840.	Glass Mounted. (Newman's.)	Box wood Mounted (Butes').)	Difference of Weather.
May 31	78.00	96.00	18 Clear
June 1	85.30	105.00	19.5 Clear
2	64.00	69.75	5.75 Cloudy
3	66.25	85.00	18.75 Clear
4	66.00	72.50	6.5 Cloudy
5	64.00	86.00	2.2 Cloudy

"Facts like these, deserve the closest investigation," said Mr. Leach, "to prevent observations becoming entirely useless by having a false record of daily temperature sent forth to the world." W. M. Higgins, Esq., then stated that he had in view an object which would put this important point at rest, and be of the utmost value to the science; and therefore a meeting of the council on the 23d inst. was immediately appointed to receive Mr. Higgins's view on this department of meteorology. The secretary then read a short paper entitled a "Proposed Table of the Force and Characteristics of the Wind," by the learned chairman. The object of this paper was to arrive at the force of the wind by an instrument of less perplexity, and got up at less expense, than those at present in use. After showing a certain numerical characteristic of the wind, the velocity in miles, and the pressure of pounds on the square foot would be found in annexed columns.

The chairman then introduced a model of his new *Anenioscope* which he fully explained, and which was highly approved of by all present. Various suggestions were made, and it was stated from its *modus operandi*, its simplicity in construction, and the little expense at which it may be raised, it is likely to supersede Whewell's, Ostler's, and every other now in use. The meeting then adjourned till November.

CONTINENTAL CHIT-CHAT.

—, May.

Every coming year draws closer the ties that connect Germany and England. The baths are now considered a remedy for all diseases, and promise to do away the necessity for all other modes of cure; *Kur* being a familiar term, used to denote their sovereign virtues. Baden-Baden, Carlsbad Spa, Kissingen Ems, are rising to great towns from insignificant villages, and threaten to supersede Cheltenham, Bath, and the marine watering-places; and the English language is becoming as universal as French was in *tempo dei Francesi*, as the Italians designate the period when our neighbors gave laws to the continent. Half the shopkeepers now speak our vernacular tongue, and it is considered an essential in the education of the upper classes, who are become not only familiar with our classics, but well acquainted with all the ephemerides of our literature. Such are some of the fruits of the long peace—and the steam navigation of the Rhine. Our good friends, however, carry the injunction of loving their neighbors as themselves *extra prescriptum*,—they love them even better.

The Germans are most earnest admirers and lovers of everything foreign. Even the tinsel vandevilles of the Variétés and the Porte St. Martin, which have scarcely any other merit than that of being mirrors of the social manners of the Parisians, are presented to the German public in their own dress. With Mozart and Beethoven in their minds, they run after Italian music, though they have no singers to give it *bedeutung*, or reconcile the mind to its flimsiness. Bulwer or Victor Hugo, James or Paul de Kock, Adam or Donizetti, Pückler Muskau or Boz,—no matter what the viands catered for the German world are, they gulp them all down with insatiable glutony. They read, listen, gape, wonder, and believe. But I am getting *Essayish*, and you will think that one need not be at Berlin to indite this. My last letter was filled

to surfeiting with theatricals—so a truce with that subject.

The season of the musical festivals is at hand: that of the North German Vereins takes place on the last day of May, in Hildesheim. Mendelssohn Bartholdy is to direct the one at Schwerin. Aachen is fixed for the Rhenish unions. The Central Vereins of the Palatinat will meet at Speyer. I hoped to be present at one of the festivals usually celebrated in the Castle of Heidelberg—but it is now announced that none will take place this year. We do not yet know whether Professor Marr's *Oratio of Moses* will be performed this summer or not, but it is said to be completed. Report speaks very favorably at Berlin of this work. I heard the other evening Liszt's *Etudes, &c. d'après Paganini*, published at Vienna. It is said to be the most difficult composition for the piano that exists—as may indeed be well supposed, when it endeavors to render on that instrument all the eccentricities of the violin. These difficulties overcome, astonish more than they delight. I do not know whether you ever see the *New Zeitschrift für Musik*, edited by Dr. R. Schumann, that appears irregularly. It contains a very interesting article on Sebastian Bach,—who is looked upon as the Dante of German music,—his followers, and the influence they exercised. The article is of great research, and traces down the progress of the art. The writer enumerates thirty-four composers of the school of the Bachs (for there were several), whose names even, not to say their works, are new to me. By the way, Prof. Thiebaut, the Pandect, whose death you announced some weeks since, and who has left a blank not easily supplied in the University of Heidelberg, was the amasser of manuscript music, such as does not exist in any private collection. He is said to have injured his fortune seriously by this mania, if such it may be called. It contains many of the treasures of the Sistine Chapel, and *chef d'œuvre* of the Spanish masters. It is to be hoped that this unique collection will find its way to England. It would be invaluable as an addition to the stores of 'The Ancient Concerts.' Independent of his religious music, the Professor has also left a collection of national songs and melodies of all countries, that are exceedingly rare. Though of a highly devotional mind, he is said for many years not to have entered a church. The clergyman who delivered the funeral oration over his grave, with much liberality, in commenting on that circumstance, threw no blame on the good old man for his neglect of public worship, but bore witness to the deep sense of devotion with which he knew him to be embued—and the overwhelming effect his Academias produced on him.

Among the coming novelties in literature, there is in the press at Breslau, a new romance, by Ludwig Tieck, that will appear in the course of the summer. The subject is taken from Italian history, and the scene laid in the time of Sixtus V. The heroine of the story is Vittoria Accoramboni, so celebrated in the sixteenth century for her wonderful adventures, her beauty, graces, knowledge, and esprit, and about whom lately C. Münch, of Stuttgart, in his historical studies, has collected some facts. Tieck appears in his old age to have, as miners sometimes do, hit upon a vein that had been lost, and supposed to be exhausted. The second volume of Rüppel's travels in Abyssinia has just made its appearance, prefaced with a handsome acknowledgement of the gratification afforded to its author by the approbation of the Royal Geographical Society of London, which at its last anniversary awarded him the Royal Medal; he being the first foreigner who has received that distinction. Speaking of Stuttgart—I have just met with the 'Deutsche Pandora,' which promises well. The work is modelled after the 'Livre des Cent-ét-Un,' and holds out an expectation that some of the best German writers will be among its contributors. The first volume principally contains memorials of that eventful period in Germany, when a general arming of its people took place; I mean in 1813. A collection of letters from Körner, Fouqué, Rahel, C. M. Arndt, and Eleanor Prohaska, the heroic

virgin who served as a volunteer, supplied by Frederick Forster, will be read with much interest. There is an anecdote told of Goethe that is quite new. At that time, it must be remembered, every man was a soldier. Perceiving Goethe approaching in full uniform, says Forster, we presented arms, and I called out,—"Hail to the poet of poets," and immediately all the company greeted the great man with a loud hurra. He touched his cap with the air of a general. "Your Excellency's disguise is of no avail," said I, "the black Jagers have a sharp eye, and at our first outbreak to meet Goethe in uniform, is too fortunate an event to be neglected. We pray you to give your benediction to our arms."

"From my heart," was the reply. I reached him my musket, &c., he laid his hand on them, and said "God be with you—all good fortune attend you, and prosper your noble devotion to your country." In reading this, we may fancy ourselves in the golden times of Greece, and that some cohort going out to battle, met with Alceus.

I have just been reading the life of that eccentric genius, Hoffmann, which has been out some months. It is mentioned, that during one of his stage engagements, he united in his own person the composer—the musician—the poet—and the scene-painter. The work has, on the whole, disappointed me—first, because it is edited by a near relative (they always make the worst of biographers)—and next, that the materials are almost exclusively derived from Hoffmann's letters, which, though sparkling with wit, give the reader a very imperfect idea of his character. Correspondence is a good accessory, but it should never form the staple of memoirs. The volumes contain, however, some caricatures and sketches not unworthy of Cruikshank, and some unpublished fragments, principally *Calotie*, and full of diablerie. I should conceive that the student Ausdem was his own reflex. It has been said in Germany, that Hoffmann was the caricature of Jean Paul, and Arnim of Goethe. There may be some truth in the last witticism. Arnim's works are now printing here; and two volumes have already made their appearance—one containing 'Isabelle von Egypten.' The third and fourth will give us the 'Kronenmacher,'—incomparably the best of his novels, as far as it has gone; for, like Coleridge's 'Christabel,' the German world for twenty years was anxiously expecting the second part. Their curiosity will now be gratified. The MS. was found among his posthumous works.

No people swear so much by names as the Germans. Though Kerner and Rückert have worn their ideas to tatters, or at least threadbare, they still publish on, and are read and lauded as much as ever. A poet always a poet, is their maxim, as a beauty is always a beauty (if sixty) with the Italians. Nor is this faith confined to their own country. A writer, once popular in England, finds here plenty of publishers for anything new. Thus, 'Master Humphrey's Clock' is appearing simultaneously in English and German, though as yet no one knows what the new Decameron may turn out. But, speaking of poets, there has appeared a new one at Giessen, known as the author of a 'History of the Celts,' which will soon be completed. I once heard the Grand Duke of Tuscany tell De Lamartine, that he had his Meditations in his pocket for two years—thus with me, and Professor Diefenbach's 'Gedichte.' They are highly metaphysical, and mystical, and difficult to understand, but worthy studying, and gems in their way. You will smile, perhaps, when I tell you, that a pendant for your *Animal Magnetic Magazine* has just issued from the Leipsic press, entitled, *The Universal Homeopathic Magazine*. It is edited by a trio of doctors of that persuasion. No. 14 has just come to hand (in mercatorial phrase)—one case is amusing. It gives an account of a horse (there could be no imagination in this case) that was heated by sledding, and went very stiff for some days after, and, when whipped and spurred, foamed at the mouth and elsewhere. So, says the editor, "I gave him one drop of Bryonia alba, divided into three pills: the next day I had him

saddled, and he went better; the third day I repeated the dose, and on the fourth he went as well as ever." Now, mark what the homeopathist says about the superiority of the brute creation as patients: "I beg to observe, that homoeopathic cures are much easier performed on beasts than men, because the former live more simply, and follow their prescriptions more punctually!"—*From a Correspondent of the Athenaeum.*

THE THEATRES.

"See that the players be well used."—*Hamlet.*

"Nothing extenuate, nor aught set down in malice."—*Othello.*

HER MAJESTY'S THEATRE.—On Tuesday night, DONIZETTI's opera, *Lucrezia Borgia*, was performed to a crowded and fashionable audience for the first time this season; it went off rather tamely, which may perhaps be attributed to the indisposition of MARIO, who was laboring under a severe cold, for which the indulgence of the house was respectfully solicited and readily granted. The trio of the first act, "Se ti tradisce," was given with somewhat of feebleness compared with the *prima donna* and TAMBRUNI, yet he sang "Di pescatore" and the pathetic "Madre se ognor lontano" with considerable sweetness and expression. TAGLIONI appeared in the ballet, *L'Ombre*, written by her father, and represented with such success by her, first at St. Petersburg. To describe the poetry of her movements, were an impossible task.—She was, to appearance, an uncreated being, a creature of air, moving with all the grace of an angel. When she mounted through the air, she looked like a bright spirit, wasting its way to immensity of space; and as she gradually became lost to sight, she was hailed by a multitude of enthusiastic plaudits.

PRINCE'S THEATRE.—SPOHR's opera of *Jessonda*, which, for want of space, we did not notice last week, was performed for the second time on Wednesday evening, to a fashionable audience, and considering it as a whole, we should say it is the most perfect of any of the operas the company have brought forward this season. The subject is that of a Suttee in love with a Portuguese officer, and rescued from the burning pile, and of a Brahmin who falls in love with a lady on beholding one, who is not a Bayadere, for the first time. The characteristic of the opera might be defined as the dark mysterious asceticism of India, through which love is bursting, as if endeavoring to overcome an ancient usurper, passion becoming awful from its struggle with restraint. These seem to be the elements—the chill marbled aspect of Brahmanism, and the fierce glow of love, wildly sporting with its solemn authority. Madame STÖCKEL HEMPEFETTER appeared as *Jessonda*. Her execution is beautifully correct; her notes of a rich quality, though she cannot command the high passages without some straining. Moreover her acting is entirely free from that inelegance which is so common among German performers. The rest of the characters were excellently filled by Madame SCHUMANN, SCHMETZEN, POECK, and KARKE—and last, not least, the admirable chorus. This opera has long been held in the highest estimation in Germany, but till now its charms have been lost to us. As a composition, it is elaborately beautiful; so beautiful, that it should be heard entire, and without mutilation. Its beauties cannot be appreciated by hearing it once, twice, or thrice; the more familiarised the ear becomes to it, the more will the hearer be charmed with its enchanting melody. The melodies are "ever changing ever new," and the orchestra seemed fully inspired with the spirit of the composer; the consequence was, perfect harmony. By the way, we should observe that the attractions of the German operatic company have induced Mr. Schloss, of Berners-street, to publish libretti of all the operas that have been produced since

the commencement of the season, consisting of Mozart's *Don Juan*, Spohr's *Faust*, Beethoven's *Fidelio*, Marschner's *Nachtlager von Granada*, and Weber's *Freischütz* and *Euryanthe*. To those who are unacquainted with the German language, these books must prove very useful, as the English translation is very carefully rendered and collated with the German text; with occasional quaintness it is true, but still with great fidelity.

DRURY LANE.—Again do we record the complete success of the *Concerts d'Ete*, which, owing perhaps to the coolness of the evenings during the past week, have been numerously attended. The attractions have been great,—consisting of the most favorite overtures,—such as *William Tell*, *Der Freischütz*, *Jessonda*, &c., &c.; Solos, Galops, Waltzes, and Quadrilles. M. JULLIEN's performance on the picolo, is quite the talk of the town. His taste and his execution are alike faultless. ELIASON, too, exerts himself most successfully. He seems lost to every thing but the business of the evening, in which he takes a very prominent part.

HAYMARKET.—Two hearty laughs have been extorted from us this week, at this theatre; the one was caused by seeing Mr. Charles KEAN essay the character of *Sir Giles Over-reach* on Wednesday, and the other by little BUCKSTONE, who personated (by desire (!)) *Marrall!!!* If theatres were established with a view to afford *amusement*, we think that the Haymarket, just now, possesses more attraction than any other theatre in London!

ENGLISH OPERA.—The same performances we noticed last week, slightly varied, have been played this. The company are striving hard to deserve well of the public, who will, we hope, return the compliment. We should like to see the house better filled with guests. It would augur well for the treasury, and infuse more spirit in the performers.

ASTLEY'S.—The *Tower of London* is still all-attractive. It has been followed during the week by a new French melodrama, and a ballet of action called the *Lion of the Desert*, in which Mr. CARTER exhibits the wonderful control he possesses over his wild beasts. His lion is a most noble animal, but we would rather see him at a distance! The Scenes in the Circle, with Mr. DUCROW's beautiful stud, and the Horse of Ten Thousand, together with the *Fêtes de Waterloo*, have concluded the performances, whose attractions continue undiminished.

FUND FOR MR. DOWTON.—**MR. EDITOR.**—Even the most conscientious journalists are liable to mistakes arising from report. The amount stated, as having been received in behalf of this venerable servant of the public, is, unfortunately, much over-rated. The whole sum hitherto realised by subscription and benefit united, does not exceed £1,300. Now it was, and is the wish of Mr. Dowton's friends to reach the sum of £2,000, and for this purpose the subscription is not only still kept open at the banking-house of Messrs. Coutts, but has places of reception kindly afforded it at Garraway's Coffee-house, Change-alley, and at the Corn Exchange Tavern, Mark-lane. What has been received already, is undoubtedly a great and welcome testimony to the merits of Mr. Dowton, and has relieved his family from the worst part of their fears; but, on the other hand, he naturally feels an anxious desire that they themselves should benefit as much as possible from the kindness of his friends and admirers, when the day arrives for his being taken away from them; and I would beg leave respectfully to impress upon those who are sensible of the great good done to society by fine plays and genuine actors, that now is their time to complete the handsome return so heartily begun towards one of the most cordial and masterly performers of the days of Cumberland and Sheridan.—I am, sir, your most obliged humble servant,

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ON SUSPENSION BRIDGES.

(BY DR. WILKINSON, BATH.)

Rope suspension bridges, in South America, China, and Thibet, have, probably, been adopted many centuries; but, from the material employed, are not calculated for the transit of heavy loads. I understand that the first suspension bridge constructed in Europe was the celebrated wooden bridge at Schaffhausen, built by a joiner, named Grubenman. It had a span of 364 feet, thrown across the Rhine. When I was at Schaffhausen, it was fortunately a few years before its destruction by the French, in 1799. At the museum appertaining to Trinity College, Dublin, I saw a good model of this bridge. About 80 years since, a small wire bridge was thrown over the Tees, near Durham, only calculated for foot passengers; and I was informed at Geneva that, from this bridge, Colonel Dufaur constructed three or four wire bridges in that part of Switzerland, and which appeared to me to answer well their intended purpose. The colonel entertained an idea, that a given weight in the form of wire will support a greater weight than the same corresponding mass in the form of a cylindrical rod. At this period, I do not recollect any satisfactory experiments relative to iron in these two states. With respect to twisted substances, as ropes of silk or hemp, their powers are no way equal to a similar mass of the same materials in the form of threads; but any arrangement preventing every part being brought into equal tension, a diminution of effect will be the result. Thus, Sir Charles Knowles ascertained that a rope three and one-fifth inches in circumference, made of the best Riga hemp, broke with 4,500 lbs.; when a similar portion was well tarred, it only supported 3,400 lbs.; so that tar prevents a great portion of the threads being called into action; and Du Hamel had, many years before, proved that white cordage is one-third stronger than when tarred. The tarring originated from an erroneous idea of its preserving quality with respect to water; or perhaps preferable quality from the agency of water. It has been demonstrated that a tarred rope frequently exposed to water will not last ten years; whilst a white rope has been efficient more than thirty years.

About sixteen years since, a Mr. Young sent me, from Mr. Maberley's Repository, various specimens of hemp, from different countries, not only to ascertain their respective strengths, but also to suggest the best mode of preserving cables and sails from the agency of water. In the experiments I tried, the Zealand had the advantage;

and I ascertained that bichloride of mercury was an excellent preservative. It is proper to observe, that I was induced to try this preparation of mercury from my late friend, Mr. Joshua Brookes, employing the solution of this substance to prevent decompositions in his anatomical dissections. A good practical estimate as to the suspending powers of a well-made rope, has been deduced from a series of experiments to be as follows:—Square the measure of the circumference in inches, or parts of an inch, and one-fifth of this product will express the weight, in the ratio of one ton for each inch. I lately measured the circumference of one of the plaited ropes used in coal works, in the neighborhood of this city, and it measured two and a half inches; this sum squared, and one-fifth of its product, correspond to one ton and a quarter. The plaited mass had four of these ropes; and if all equally good, and at every instant in the same tension, would be competent, when new, to support five tons. In suspension bridges, a prudent engineer always calculates the strength of his materials to be adequate to double the weight ever employed. In mining establishments, a double caution is requisite where lives are concerned, not only never to allow the weight to exceed one-half the strength of the materials, but also, from time to time, to make ample allowance for what defective powers of support may result from wear and tear in ropes continually exposed to considerable abrasions; and it would be an act of humanity, if the proprietors of coal works adopted a similar protecting apparatus that was submitted to the public by my very ingenious friend, Admiral Bullen; and it may not be to some uninteresting to give a short account of the formation of ropes, &c. The first arrangement of the fibres of hemp is to form what is termed yarn. A number of these yarns constitute a strand; three of these strands make a hawser; four, a shroud; and a cable, of three hawsers, or three shrouds. Cordages less than an inch in circumference are called lines; and when more, ropes. Thus, when a sailor is rejoining a rope, to reeve in a block, without increasing its size, he opens the ends from three to six feet, and places them close together, regularly one on the other; one strand is then unlaid, and the opposite strand laid upon its intervals each way, and the two strands knotted together at the ends and middle of the splice; the ends are then halved, and pushed under the next strand.

Galileo, with that acumen he so superiorly possessed, deduced, from a variety of well-conducted experiments, that the direct strength of cohesion is proportionate to the area of the section of fracture, deducing that the transverse section of any beam must depend on its length and depth being impaired

by the one, and strengthened by the other; and this principle appears to be supported by the experiments of Hutton, Telford, Brown, Rennie, and Tredgold. Rennie says, that a wire, one-tenth of an inch, of the best English iron, will support 348lbs.; and the same dimensions, of the best Swedish iron, will not break by less than 449lbs. A cylinder, one inch in diameter, would contain one hundred times the quantity of iron; and, if of proportionate supporting power, would be equal to 310 cwt., or 15½ tons; and Count Rumford says, that an iron cylinder, an inch in diameter, will support 28 tons. There is a great difficulty in reconciling the results of various experiments on what may be termed the passive strength of the materials employed; and my late learned friend, Professor Robison, observed that, from many accidental imperfections, the cohesive power of iron will be materially influenced. I presume, from these observations, no secure deductions can be drawn but by a series of well-conducted experiments with the actual materials intended to be employed. To this learned Professor we are indebted for an excellent practical method for determining the figure of an arch in equilibrium, so that the inverted chain hangs in such a form that the weight of each link is held in equilibrium by two forces, produced by the weights of the portion below it, and of that portion increased by the link.

In all the bridges of suspension with which I am acquainted, the supporting chains are concave, except Monk Bridge, near Leeds, and Aire Bridge, both erected by the same engineer; the arch is formed with the convex side upwards, and the support on the abutments about 20 feet below the road surface, and the arch 150 feet wide.

The first suspension bridge calculated for the transit of heavy goods, was erected over the Thames at Hammersmith, by Capt. Brown; since which period, Mr. Telford undertook the Menai Bridge, being 560 feet between the points of suspension; and one now constructing at Clifton, the distance between the centres of the abutment piers being 700 feet, and the height of roadway above the water 240 feet; and in different parts of the kingdom there are other suspension bridges from one to three hundred feet span.

I have lately had an opportunity of reading an admirably written letter from Lord Western to Viscount Melbourne, descriptive of a suspension bridge built across the Avon, at Bath, by a Mr. Dredge, of this city, constructed on principles of great simplicity.

Nearly a century has elapsed since the eminent mathematician, Emerson, demonstrated that, of an end beam of wood bound by parallel planes, with one fixed in a wall, and the planes parallel to the horizon, one-half may be cut away without losing

any supporting power. On a similar principle Mr. Dredge's plan materially depends, and thus combines an increase of supporting powers, with a considerable diminution in the quantity of materials employed. The weight of all the materials employed in these suspending bridges, is supported by the land piers, and hence may be resolved into two levers, the fulcrum of each being on a pier, and the extremity of each lever uniting at the centre. Between the piers and the centre, are placed a number of supporting rods—the rod nearest the pier supporting the greatest weight, and the decrease of supporting power towards the centre taking place in a geometric series, so that at the centre there is scarcely an appreciable weight—that if by a cutting instrument the bridge should be divided, it would not fall. Mr. Dredge has very ingeniously availed himself of this decrease of tension, in the same proportion diminishing the supporting chain; by thus abstracting half the weight of iron in the supporting chain, he relieves himself of a considerable weight acting at the extremity of the lever, by dividing diagonally the parallelogram of chain adopted in other bridges, into two parts, thus forming two equal sized triangles, the apex of each uniting, whilst the respective bases are attached to the abutments, by which arrangement the tension of every part is proportionate to the strength of the chain.

Mr. Dredge is also entitled to considerable praise for his diagonally constructed suspending rods, with increasing acute angles as receding from the pier, thus approaching to a perpendicular where a greater strength is required, and increasing in obliquity in the ratio of the diminution of tension; by which arrangement, under any circumstances of the transit of great weight inducing a variation in the curvature, the supporting strength would be increased by a proportionate diminution in the diagonal direction of the suspending rods, similar to the dishing of wagon wheels, when the road inclines; the wheels are rendered capable of supporting greater weights from the spokes being brought into a perpendicular direction, or it may be superiorly illustrated by the admirable structure of the human spine, formed of 24 moveable bones, varying in their arrangements according to the weight they have to support.

In this constructed bridge, as well as those I have had an opportunity of seeing in Switzerland, and Germany, there is a vibratory motion induced by the transit of comparatively light weights. Every suspension bridge is to be considered as a double pendulum—the concourse and recourse of their respective vibrations performed in equal times; and if the impulses should be isochroal, the whole structure of the bridge becomes dangerously disturbed. A remarkable illustration of this occurred at the Broughton Suspension Bridge, near ~~B~~ Winchester, and which had long withstood the ordinary traffic. One day, a regiment of soldiers was passing over the bridge; the first and second companies walked with irregular steps, and passed safely; during the passage of the third company, a fifer struck up a favorite march, and the men immediately dropped into the regular military step, and presently the bridge gave way and let them all into the river. There is another instance of a suspension bridge agitated by the strength of arm of one man; by the first few impulses no effect was produced, but by timing the impulses similar to the augmenting the motion of a swing or pendulum, a vibratory motion was produced. To this cause may be attributed the present dangerous state of the Menai Bridge. We remain uninformed as to the principle of communication of these undulatory motions, varying in velocity according to the substance through which transmitted. To counteract such results, Mr. Brunel, the eminent engineer of the Thames Tunnel, was, about 20 years since, consulted, relative to the Bourbon Suspension Bridge: he recommended a double system of chains, the usual upper chain and the lower inverted. The

results I know not; the increased expense of such a plan must be considerable.

The toll-keeper of Mr. Dredge's Bridge informed me, that a light cart produced more tremor than a heavily loaded wagon. I have had frequent opportunities of observing the Birmingham, and the Western Railroad: the superiority of the latter, from its greater width, is evident, from the train carriages having comparatively so little pendulous motion, as is very observable in the Birmingham train. The objection stated against Mr. Brunel's excellent principle, of atmospheric resistance being considerable by its action on such an increase of surface, is easily demonstrated, for with a velocity of 40 miles an hour, the aerial pressure would never amount two cwt. The resulting advantages will hereafter be found considerable: by the steady movement of the train, the road train plates and machinery will be less disturbed, and future repairing expenses considerably diminished, and from these circumstances I am led to believe that the Great Western Railroad will be superior to any other in the kingdom, highly to the credit of the active and intelligent engineer.

I know not whether any diminution of vibration in Mr. Dredge's Bridge has resulted from his introduction of cross suspending bars—it is probable, that if the metallic communication of the chains at the centre were destroyed, each terminating part passing through strong oak block firmly bounded by iron, the vibration could not be transmitted through the range of chains, and if, by the adoption of some such principle as this, any tremulous motion could be prevented longitudinally, it would also be greatly diminished transversely as by the impulses of wind; and greatly contribute to the perfection of a bridge constructed on principles entitled to the greatest attention.

With respect to the Convex Suspension Bridges, near Leeds, &c.—the equilibrium depending on so many contingent circumstances, like the common arch, requires a nice balance and adjustment. By any extension of materials from overhead, or from change of temperature, a varying power or thrust is created on the pier, in a direction most unfavorable for resistance, without that protection adopted in the well constructed roofing of houses, where in all dangerous thrusts against the walls, a tie beam is applied, with the additional security of a king post suspended from the rafters. From any of these defective causes, a convex bridge must fall; whilst in the concave form, when the chain is made of the best malleable iron, the metal tears, but does not break; and it has been ascertained by experiments, that a cylindrical rod of the best iron, one inch in diameter, will be acted upon by a weight of eight tons, but will sustain more than double that weight without separation; hence a rule is afforded us, for calculating the strength of chain by previously ascertaining the weight of the roadway, and the materials to be employed.

It has been observed of breweries, situated near the line of railroads, that from the agitation produced by the trains, fermentation has been disturbed.

Bath; June, 1840.

THE NORTHERN COAL TRADE.

A document, just published by ord'r of the House of Commons, brings the subject of the coal trade once more to our notice, and calls more loudly than ever for warning and remonstrance. It is a return of the quantities of coal shipped from the various ports of the empire during the years 1838 and 1839. It will be recollect by those who take an interest in the matter, that we have often referred the advocates of the "restrictive" system to its effect on the Tyne, the Wear, and the Tees, as the most convincing evidences of the baneful effects of "combination" on the ancient seats of

this important commerce. We have shown, that whilst in the Tyne and the Wear, the coal trade, of late years, has either diminished, or been as nearly as possible at a stand-still, the new collieries, (the offspring of "combination"—the *natural consequence* of an *unnatural system*,) which vend their produce in the neighborhood of the Tees, have increased their exports in a ratio most astonishing. But let our readers judge for themselves from the following table, showing the *coastwise exports* of the ports of Newcastle, Sunderland, and Stockton, for the last seven years:—

TONS OF COAL EXPORTED COASTWISE.

	Newcastle.	Sunderland.	Stockton.
1833.....	1,921,848.....	1,175,036.....	571,800
1834.....	2,017,462.....	951,713.....	623,484
1835.....	2,261,401.....	928,999.....	677,941
1836.....	2,274,768.....	971,190.....	916,440
1837.....	2,385,192.....	931,248.....	1,145,827
1838.....	2,453,225.....	948,388.....	1,219,928
1839.....	2,149,814.....	913,394.....	1,308,770

We shall be told, of course, that the port of Stockton includes Hartlepool and Seaham: but if it had a hundred mouths, the circumstance would be unimportant in the consideration of this solemn question—Would the trade of the port of Stockton have increased, and that of Newcastle and Sunderland stood still, in so remarkable a manner, had the "combination," and the suicidal regulations of which it has been the parent, not existed? That is the point at issue, and we fearlessly answer—No!

Let us not, however, be misunderstood. We begrudge not the good fortune of the port of Stockton. Neither do we suppose that the case would have been reversed—that the trade of Stockton would have stood still, whilst that of its northern neighbors was increasing—had the "combination" been removed. By no means. The prosperity of all would have been promoted. Canal proprietors and corporations in various parts of the empire, would not have been called upon to lend a helping hand in excluding the coal of the northern district from the various markets of this country and the continent. The imports of inland coal into London would not have increased six hundred per cent. in 1839, as compared with 1838—a fact by which the power and extent of the distant rivals of the northern coal-owners may be estimated.

It will afford some satisfaction, however, (although it be of rather a melancholy kind), to know that the foreign coal trade of late years has considerably increased in all the ports of this district:—

COAL AND CINDERS EXPORTED TO FOREIGN COUNTRIES.

	Newcastle.	Sunderland.	Stockton.
1833.....	233,709.....	176,487.....	3,700
1834.....	230,342.....	149,956.....	9,988
1835.....	313,107.....	154,538.....	26,840
1836.....	415,849.....	170,367.....	36,943
1837.....	476,157.....	242,463.....	46,516
1838.....	654,175.....	308,168.....	86,699
1839.....	558,052.....	370,620.....	111,707

Thus it appears, that whilst the commercial transactions (as far as coal is concerned) of the people of Newcastle, Sunderland, and Stockton, with their own countrymen, during the last seven years, have increased not quite 20 per cent., there has been an increase of not less than 150 per cent. in their dealings with foreign nations.

It is fortunate, certainly, for the coal trade, that there should have been so rapidly-increasing a demand from foreign manufacturers for the raw material of those ports; and we leave the advocates of dear bread to draw their comfortable conclusions from the circumstance.

We have still two tables left, from which the great merchant-landowners of the north may learn a lesson. We have one table showing English and another *foreign* demand for the fuel indispensable to manufacturers; and a moment's examination will discover the melancholy truth, that the people of this country are now reduced to the degraded condition of mere diggers of the earth—glad to gain their daily bread by supplying a

ommodity to the foreigner, which, but for the internal bread tax, would have been wanted at home.

COAL IMPORTED INTO LONDON.

1834	2,080,547	1836	2,399,551	1838	2,582,770
1835	2,299,816	1837	2,629,321	1839	2,638,256

TONS OF COAL SENT OVER SEA FROM THE UNITED KINGDOM.

1834	615,255	1836	916,868	1838	1,313,709
1835	736,060	1837	1,113,640	1839	1,449,417

Here, then, we find the demand in the greatest English market for coals increasing but 26 per cent. in six years, whilst the orders from foreign nations—from rivals created and protected by the bread taxers—have increased during the same period to the extent of 140 per cent.—a ratio of increase which we leave the corn-taxers to account for.—*Gateshead Observer.*

THE DIAMOND MINES OF SUMBLEPOORE.

Within the last few years, the above mines have ceased to produce any material profits to the East India Company; indeed, what gems are in the practice of being gleaned from the above district are chiefly so by accident. The rose, black, and yellow kinds, have occasionally been taken from the *detritus* of the river, which washes the town. About 25 years ago, a very fine adamantine specimen was picked up by a common sepoy belonging to the fort; it was lying exposed on the sand, and had been washed down with the current from the undulating country above; it weighed six and two thirds of a carat, and was a sample of the first water. This, I believe, is the largest and most valuable gem that has been ever detected in the Sumblepoore district. The soil in which these precious stones are found, is a fine bright gravel, about 10 feet below the surface, and the "matrix" in which they are immediately imbedded, is a rich red ocreous earth, much resembling brick-dust. These mines would amply reward an enterprising adventurer, who might undertake to work them. Some few years since, Major Buckley, of the 4th regiment of native cavalry, explored the diamond mines of Sumblepoore, and amassed a large collection of very choice gems, which he brought home with him to this country, with a view to induce the East India Company to prosecute an investigation into the probable value which might accrue from working the same on an extensive scale; but they evinced little or no disposition to encourage his prospects, and he, in consequence of that circumstance, abandoned the pursuit. Sumblepoore is situated in a wild country, a great portion of which is unexplored, and the several hill rajahs, in the locality, are of a very turbulent and refractory spirit. Formerly the East India Company entertained an agent at the above station, through whose hands, and under whose seal, all the diamonds brought to him, which were discovered in the district, were forwarded to the general treasury at Calcutta, when they were sorted and sold to native merchants by public auction; but the expenses incurred in maintaining an officer for this purpose, were found to exceed the value derived from the produce of the mines, and the trade in question was forthwith relinquished. When Colonel Gilbert, who was the last commercial agent who resided at Sumblepoore, returned to Europe, the affairs connected with the above mines fell into the hands of a Mr Babington, who was engaged in a shell lac and lac dye speculation in that neighborhood, but he had neither energy nor encouragement to improve the prospect that lay before him. Besides the diamonds, rubies and a large variety of onyxes and cornelians are distributed throughout the sands of the river, the name of which is Mahanuddee, and signifies "mighty stream." Its source is derived among the mountains denominated the Neelgherries, and after passing through a vast tract of unexplored country, skirts the city of Cuttack, and eventually discharges itself into the bay of Bengal, near Point Palmyras. The sands chiefly consist of a *detritus* of jasper, calcedony, precious

garnet, and spinelle ruby. This station was, about 25 years ago, garrisoned by a regiment of native infantry, but, owing to the exceedingly unhealthy state of the country around, and the frightful mortality which pervaded the troops, it was hastily abandoned. The fort, which is of Mahratta origin, is now in ruins, abutting on the "Mahanuddee;" and Mr. Babington is the only European who is rustinating on the spot. Those who formerly sojourned here have, years since, with their generation, passed away. The chief natural productions of the province are shell lac, lac dye, bees' wax, and indigo. It is about 60 miles from the hill fort of Nagpore, but the line of Dauli is exceedingly dangerous, in consequence of the numbers of tigers and other predatory beasts which infest the district. The traffic is transported from and into the interior by a navigable communication on the river Mahanuddee, which is capable of floating boats of 80 tons and upwards during the periodical rains. It is a vast pity that the Sumblepoore district has not been more generally looked after than it has been, as it is one of the most wealthy and luxuriant tracts of territory under the Bengal presidency.

SPECIFICATIONS.

A LIST OF SPECIFICATIONS

ENTERED AT THE BOLLS CHAPEL OFFICE, UP TO
THE WEEK ENDING JUNE 20, 1840.

(Continued from page 387.)

ENGLAND.

JACOB BRAZILL, Governor of Trinity Ground, Deptford, *improvements in obtaining motive power*, June 16.—A large disc of metal or wood is placed horizontally, with a vertical shaft through its centre; partitions radiate from the boss towards the outer circle, which is enclosed by metal or wood similar to a drum, with the under part left open.

The boxes, formed by the partitions, decrease in their transverse dimensions towards the boss, in order that the current of air, which is impelled against the fans or partitions, shall act immediately on the interior of the outer circle, which being also weighted, acquires a greater degree of centrifugal force.

Two or more bellows, being placed under the drum, are worked by a crank shaft, which is driven by manual or other power. The current of air passing by the nozzle of each bellows, strikes against the fans of the drum, so as to give it a rotary motion.

DAVID NAYLOR, of Copley Mill, near Halifax, York, manufacturer, and John Brightton, junior, of Manchester, Lancaster, machine-maker, *certain improvements in machinery for weaving single, double, and treble cloths, by hand or power*, June 16. First claim is for the great facility and accuracy in the mode of lifting or lowering the shuttle-boxes to or from the level of the shuttle race. At the end of a horizontal shaft is placed a tappet, which, in revolving, acts on the stud or pin projecting from the shuttle-box that runs in the groove of a vertical frame. The movements of the tappet are so regulated that the shuttle-box shall rise or fall opposite the race with the shuttle required, and while the pick continues to act, the tappet ceases to revolve.

Second claim is the application or use of a lever or bar to form perfect and even selvage. Near to the selvages of the cloth or fabric, is placed a notched lever or bar, which holds or secures the weft thread during the action of the return pick.

Third claim is for stopping the loom when the weft breaks, or when the weft has not been placed between the warp. A lever is made to rest on the weft that is carried by the shuttle; hence, if the weft should be omitted, or should break, the end of the lever descends into a recess, and causes the action of the loom to cease.

The two last claims are not very intelligible.

First, the peculiar application of certain additional lifting or hooked wires, and their balance weights, to lift the warp threads; then the method of what is termed "reading on," or piercing the cards with holes, for working both the pattern or figure on the card, instead of having the cumbersome board divided.

JAMES WILLIAM THOMPSON, Turnstile Alley, Long Acre, upholsterer, *improvements in the construction of bedsteads*, June 16.—Racks and pinions, in conjunction with jointed rods, are applied to the sacking or thin mattress of a bedstead, in such manner as to cause the body of an invalid to assume any posture that may be required.

Within the frame of the bedstead is an inner frame, to which the sacking must be attached. This inner frame is jointed in different parts, and sliding tubes are passed over these joints, when not required to be in use. A rack, working in the groove of each bedpost, is made to rise and fall by the aid of a pinion; hence when the pinions are in gear with the racks, which support the ends of the inner frame, the invalid may be raised from his bed; or should the invalid only require his body to be raised, then the pinions at the foot of the bedstead are put out of gear, the sockets are drawn from the joints on the sides of the inner frame, and the racks on the bed-posts at the head of the invalid are made to rise by means of the pinions, whereby the mattress will cause the body to assume the required posture.

BRITISH PATENTS.

AN ALPHABETICAL LIST OF BRITISH PATENTS GRANTED
FROM JANUARY 1ST TO JUNE 30TH, 1840.

(For the Year 1839, see Page 2.)

- Agricultural implements,—see Ploughs, W. C.
- Air and vapor,—see Apparatus, C. S.
- Alarms, May 12, Foote, R. *Vol. 3. 322*
- Animal charcoal restored, March 31, Mac Innes, J. *Vol. 3. 213*
- Animal substances,—see Preserving, W. J.
- Animal woolen, &c., substances from decay, March 19, Burnett, W. *Vol. 3. 227*
- Apparatus for impregnating liquids with gas, March 7, Tyler, H. *Vol. 3 page 179*
- Apparatus for suspending pictures and curtains, April 15, Potts, W. *Vol. 3. 260*
- Apparatus for the support of the human body and distortions, Feb. 25, Kingdom, R. *Vol. 3. 147*
- Apparatus for withdrawing air or vapors, Feb. 5, Carson, S. *Vol. 3. 99*
- Apparatus to bedsteads, chairs, &c.,—see Beds, H. J.
- Ash-pits,—see Doors, S. J.
- Augers or tools for boring, June 24, Ash, W. *Vol. 4. 51*
- Balls,—see Fire-arms, C. J. R.
- Barometers and Sylphides, April 2, Cummins, C. *Vol. 3. 230*
- Baths heated,—see Kitchen-range, S. W. and P.
- Bats of earthenware, and China clays and apparatus, Jan. 11, Wall, G. *Vol. 3 page 34*
- Bearings,—see Friction, G. C.
- Beds, mattresses, and apparatus applicable to bedsteads, couches, and chairs, Jan. 21, Hall, J. *Vol. 3. 67*
- Beds, mattresses, and packing materials, May 12, Walton, J. *Vol. 3. 522*
- Bedsteads, &c.—see Beds, H. J.
- Beer engines, May 13, Ernest, H. *Vol. 3. 372*
- Biscuit,—see Bread, H. S.
- Bleaching and dyeing cotton, &c., March 25, Knight, S. *Vol. 3. 233*
- Block-printing on wool, &c., June 9, Hampson, R. *Vol. 3. 389*
- Blocks,—see Printing, H. R.
- Bobbin-net lace, Jan. 28, Smith, J. J. F. *Vol. 3. 445*
- Bobbin-net on twist lace, March 16, Crofts, W. *Vol. 3. 212*
- Boilers,—see Furnaces, M. P. M.
- Boilers,—see Regulating water to, K. J.
- Boilers,—see Steam engines, C. T.
- Bolts,—see Nails, J. J.
- Bottles, &c.—see Fluids retained, B. W.

- Bottles, necks of,—see Cork cutting, H. T. G.
 Boxes, safes from fire, Feb. 26, Milner, T. *Vol. 3. 163*
 Braids and plats, May 28, Taylor, H. A. *Vol. 3. 372*
 Braids and plats, June 9, Nickels, C. *3. 368*
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 Buttons, cutting out, stamping, &c., January 21, Wakefield, B. *Vol. 3 p. 84*
 Buttons, knobs, rings, June 17, Prosser, R. *4. 50*
 Candles and apparatus for applying light, March 23, Palmer, W. *Vol. 3. 218*
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 Candles, and operating on oil and fats, March 10, Gwynne, G. *Vol. 3. 190*
 Caoutchouc, wood, &c.,—see Fabric, H. J.
 Capstans,—see Cranes, C. J.
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 Castors for furniture, April 23, Rymer, J. M. *3. 278*
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 Chairs,—see Beds, H. J.
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 Cleansing and repairing roads, &c., April 15, Whitworth, J. *Vol. 3. 261*
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Vol. 3. 9 Coating metals,—see Metals, E. G. R. and H.
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 Cocks,—see Stuffing boxes, R. W.
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 Composition to resemble ivory, horn, &c., Jan. 25, Boden, J. A.
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 Cornices, mouldings, and window sashes, Feb. 22, Cuerton, R. *Vol. 3. 131*
 Corn,—see Cleansing, L. B. L. de Baron.
 Corrosion in metals prevented, May 2, Wall, A.
 Cotton, &c.,—see Drawing, A. T.
Vol. 3. 210 Cranes, windlasses, capstans, April 15, Caldwell, J.
 Crushing and preparing flax, hemp, phormium tenax, &c., Jan. 7, Low, D. *Vol. 3 p. 34*
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 Cylinders,—see Tubes, S. T.
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 Engines,—see Steam-boilers, H. F.
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- Engraving by machinery, Jan. 18, Walker, A. E. *Vol. 3 p. 51*
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- Light apparatus,—see Candles, P. W.
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 Liquids impregnated by gas,—see Apparatus, T. H.
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VARIETIES.

Power of Co-operation.—Travellers on the continent, justly regard the famous military road of the Simplon, constructed across the Alps by the orders of Napoleon, as the grandest achievement of the kind in Europe. It is 45 miles in length, passes over a mountain 6,174 feet above the level of the sea, and rises on each side with a uniform inclination of $\frac{1}{24}$ inches in every six feet, or 1 in

29: it has 50 bridges and five tunnels, the latter measuring together 1,338 feet in length. But even this stupendous work falls far short of the North Midland Railway. The latter is $7\frac{1}{2}$ miles in length, has upwards of 200 bridges and 7 tunnels, measuring together 11,400 feet in length (nearly $2\frac{1}{4}$ miles.) The cost of the Simplon road was 18,000,000 francs (£720,000 sterling), but that of the North Midland will approach to £3,000,000. And whilst the expense of the Simplon route was defrayed from the treasuries of two great kingdoms, France and Italy, and the work was executed on the decree of the most powerful monarch of modern times, and completed within six years, the more magnificent enterprise of the North Midland has been accomplished by a company of private merchants and capitalists, out of their own funds, and under their own superintendence, and within the brief space of little more than three years. Such is the power of co-operation!

A Table of Mortality in the Metropolis.—The following are the results of "A Table of Mortality in the Metropolis, showing the number of Deaths from all Causes, Registered in the Week ending Saturday, the 20th of June, 1840." The Table is issued from the Office of the Registrar-General:—

CAUSES OF DEATH.	Weekly Total.	Average 1838.
Epidemic, endemic, and contagious diseases.....	133	265
Diseases of the brain, nerves, and senses.....	139	156
Diseases of the lungs, and other organs of respiration.....	231	275
Diseases of the heart and blood-vessels.....	18	16
Diseases of the stomach, liver, and other organs of digestion.....	60	57
Diseases of the kidneys, &c.....	2	5
Childbed, diseases of the uterus, &c.....	10	10
Diseases of the joints, bones, and muscles.....	5	8
Diseases of the skin, &c.....	1	1
Diseases of uncertain seat.....	95	102
Old age, or natural decay.....	54	79
Deaths by violence, privation, or intemperance.....	21	26
Causes not specified.....	2	13
Deaths from all causes.....	771	—
Average weekly deaths.....	..	1013

	Deaths in the Week.	Average Weekly Deaths, 1838.
West Districts.....	110	156
North Districts.....	139	172
Central Districts.....	158	208
East Districts.....	170	239
South Districts.....	194	238
Total.....	771	1013

It is stated, that under the term metropolis are comprised the 32 districts herein mentioned, which include the city of London *within* and *without* the walls, the city and liberties of Westminster, the *out parishes* within the bills of mortality—and the parishes of St. Marylebone; St. Pancras; Kensington; Fulham; Hammersmith (Chapelry); St. Luke, Chelsea; Paddington; St. Mary, Stoke Newington; St. Leonard, Bromley; St. Mary-le-Bow; Camberwell; Greenwich; St. Nicholas and St. Paul, Deptford; and Woolwich. The population as enumerated in 1831 was 1,594,890. The weekly average for 1838 was obtained by dividing the deaths registered in that year by 52. In comparing it with the weekly deaths in 1840, it must be borne in mind that the metropolis increases nearly two per cent. annually; and that, if the population had been the same in 1838 as in 1840, the deaths would have been one-27th part more numerous.

General Register Office, June 25, 1840.

Warehousing.—Antecedently to the present century, a restraint and prohibition pervade the adminis-

trations of our maritime and revenue affairs, producing inconvenience to the merchant and detriment to commerce. Much of such inconvenience arose from the circumstance of the import duties being required to be paid on the landing of goods, amounting frequently to many thousand pounds. Such was more particularly the case during the late war, when the usual regularity of commercial transactions was much interrupted, and the merchant at times called upon, on the unexpected arrival of a ship, for a large advance of duties. This gave rise to a system of deferring payment, by allowing goods to be secured in warehouses, or other approved places, under the locks of the Crown, and to be taken out as might suit the convenience of parties, the payment not being called for until the goods were so taken out. Hence in 1803, the establishment of the General Warehousing system. Numerous have been the claims as to the origin of this system. May it not, however, be traced to the primitive ages? for we read in Genesis, in the affecting history of Joseph and his brethren, "Let Pharaoh appoint officers over the land. And let them gather all the food and lay up corn, and let them keep the food in the cities, and that food shall be for store." Sir Robert Walpole, 1733, when he brought forward his excise scheme, attempted a measure of this sort on a very limited scale, but in consequence of severe opposition abandoned it. Dean Tucker, too, in 1750, made a similar proposal without effect. The measure, however, was revived at the beginning of the present century, and the management of it confided to the late Mr. Frowin, then Chairman of the Board of Customs; a post, by the bye, which he held for a very extended period, with no less honor to himself than of advantage to the country. The warehousing department has now become by far the most important in the whole circle of fiscal affairs. It is by no means an unusual thing for orders to be issued in a single day to a common locker for the delivery of goods, the duties alone on which, amount to £10,000, or even £15,000; for several thousands is almost an every day occurrence. The value of the merchandise deposited in warehouses under this system, at London, Liverpool, Bristol, Hull, and other ports, cannot be estimated, for merely government duties, supposing the stock on hand to be equal only to three years' consumption, at less than fifty millions. Our ancestors would have been startled at the hint of the bare possibility of such an event; even some of our contemporaries may not perhaps be aware of the fact. Still such is the case. History shows nothing equal to this; no, not even "Solomon in all his glory." This vast machinery is, nevertheless, kept in regular and almost perpetual motion. The merchant gets his due supply, the government the just portion of duties.—*Pope's Yearly Journal of Trade.*

Manufactures of Great Britain.—The progress made by Great Britain in manufactures since the middle of last century has been quite unprecedented. At that period the quantity of iron produced in England and Wales is not supposed to have exceeded 22,000 tons a year; but the application of pit-coal to the production of iron having soon after become pretty general, the manufacture began gradually to increase, the produce in 1788 being estimated at 68,000 tons, in 1796 at 126,000 tons, and in 1806 at 250,000 tons. Since this last mentioned period, the progress of the iron trade has been such, that at this moment (1839) there are certainly not less than from 950,000 to 1,000,000 tons of iron annually produced in England and Wales, and about 120,000 tons in Scotland. The business has now become of the very highest importance. Iron is employed with the greatest advantage in many ways, for which it was formerly supposed not to be at all suitable; so much indeed is this the case, that iron steam-boats have been constructed for crossing the Atlantic: and it is to the cheapness and abundance of our supply of iron, as much as to any thing else, that the superiority of our

machinery, and consequently of most branches of our manufactures, is to be ascribed. But the progress of the British cotton manufacture since 1760 is undoubtedly the most extraordinary phenomenon in the history of industry. In 1764 the imports of cotton wool did not amount to four million pounds, whereas they now exceed the prodigious amount of 450 million pounds. It is difficult to give any very satisfactory explanation of this astonishing progress. Much, no doubt, must be ascribed to the influence of the general causes already specified, but much also has been owing to what may be called accidental circumstances. The cotton manufacture may, in fact, be said to be wholly the result of the inventions and discoveries of Hargreaves, Arkwright, Watt, Crompton, and a few others. And the fact of Hargreaves and Arkwright being Englishmen, gave us that early priority and superiority in the manufacture which our favorable situation in other respects has since enabled us to maintain. It is seldom an easy matter for new rivals to come into successful competition with those who have already attained to considerable proficiency, in any art or manufacture; and they rarely succeed, unless they have some very material advantage on their side. But, in this instance, besides having the start of foreigners, the natural and moral circumstances under which our manufacturers have been placed, have given them advantages not enjoyed in anything like the same degree by the manufacturers of any other country. Were any change or revolution effected in machinery that should admit of coal being advantageously dispensed with, it is difficult to say what effect it might have in the long run on our manufactures. We believe, however, that our advantageous situation, the magnitude of our capital, the industry of our workmen, and the determination of all classes to advance themselves in the world, would, under any circumstances, insure our continued prosperity as a manufacturing people. So long, however, as coal continues to be as indispensable in industrious undertakings as at present, and so long as we preserve our free institutions, without the alloy of popular licentiousness and agitation, there is not so much as the shadow of a ground for supposing that our manufacturing prosperity will be impaired. On the contrary, it is reasonable to expect, seeing the increasing wealth of our foreign customers, the greater competition at home and abroad, and the greater attention paid to scientific investigations, that it will go on increasing, and that the discoveries and progress to be made in the next age will surpass those made in the present, wonderful as they have been.—*M'Culloch's Geographical, Statistical, and Historical Dictionary, part 6, just published.*

French Coinage.—The *Moniteur* states, that the preliminary experiments for the new coinage in copper, continue to be made under the direction of Baron Thénard. The Minister having prescribed that an essay should be made of casting bars of perfectly regular dimensions, and free from all oxidation, composed of 90 to 96 parts copper, and 10 to 4 parts pewter; an experiment for that purpose has been made with cast-iron moulds, and has been perfectly successful. By this method, the new money will be free from all oxide, and the operation will be conducted with greater economy, on account of the cast-iron moulds' being able to be cast as they are in the Mint of London, by machinery.

Wool-Growing.—It is well known to English wool collectors and manufacturers of cloth, that pasture has a powerful influence on the nature and properties of the fleece. This fact is indeed evinced in every process of consumption, or manufacture, and under this head I therefore deem it requisite to offer some general observations, with a view to aid the judgment of the inexperienced sheep owners on a subject in which their interest is materially concerned. In order to convey my meaning with greater accuracy and precision, I shall remind the reader of the experiments made

on sheep pasture in England, and in the way of illustration endeavor to show to the Colonial sheep masters the bad effects produced on wool when the sheep are fed in chalky districts, contrasted with a portion of the same flock pastured on land more congenial to the growth of soft wool. From this circumstance the advantages may easily be deduced, which will result to those who make a judicious choice of reserved land on which their flocks can feed a month previous to the shearing season, as by this means the bad effects of any late herbage will be counteracted, the fleeces of their flocks will handle soft, and increase in weight and consequently in value. By way of example, we will suppose half a flock of Southdown sheep reared in the centre of the South Downs (known to be calcareous and chalky land) and the other moiety transferred to some of the rich land found in the neighborhood of Pevensey level, near Lewes. The contrast that would be perceptible in the fleeces of these two portions of the same flock, when shorn, is inconceivable to those who have not had an opportunity of witnessing the powerful influence of a change in pasture on the wool of sheep. Both the temperature of climate and herbage have an evident effect on wool, as may be seen in England on that of those flocks pastured within a few miles of the sea coast, beginning with the Isle of Sheppy, round the coast of Kent, Sussex, Hampshire, &c. The wool of flocks fed within ten miles of the sea-coast, generally possesses a longer staple and more pliancy of texture, and consequently it is better adapted to the use of the spinner than the produce of the same flock pastured further in the interior on a similar soil. This difference I am disposed to impute to the exhalations arising from the sea, which, like the smoke of London, extend inland at least ten miles, thus operating on the herbage as well as on the wool. I am the more inclined to draw this inference from conversing with an enlightened gentleman, well acquainted with the cotton plant in the United States, and with cotton wool in general, who states that the sea air has the same influence on the cotton plant as on the wool of sheep. The sea island cotton is the strongest and the longest, and consequently best suited for spinning, and when the plant is removed from its favorite soil and transferred into the interior, the wool becomes tender and of a different quality. It may almost be added that the change produces another species of cotton wool. But, to return to the effect produced on sheep's wool, by the nature and quality of the land on which they pasture. Herbage, grown on chalky land, being dry and less succulent than that produced on a loamy soil, it is consequently less nutritious, and the animal is thus deprived of the means of affording the requisite yolk to fill the pores of the fibre, which operates to nourish and soften the hairs of the fleece; while at the same time the small particles of chalk dust, which abound on the first class of land, raised by the wind or by the movements of the flock, intermingle with the fleece, and absorb that portion of the yolk which nature designed to support, soften, and nourish the fibres of which the fleece is composed.—*Southey's Treatise on Wool.*

Bees.—Although the weather has been favorable to the early appearance of mother wasps, I believe fewer have been seen this season than usual. As the wasp is perhaps the most powerful and destructive of all the enemies of honey bees, I hope all bee cultivators will keep "a sharp look out" throughout the summer. The observations of Huish, with respect to wasps and humble-bees, may not be unacceptable to those of your aparian readers who are unacquainted with them; I therefore beg their attention to the following quotation:—"Independently of the personality which these two animals entertain for each other, there is another very cogent reason why the aparian should be so solicitous to destroy the wasps. It is an insect that lives by rapine and plunder; its food is the sustenance of the bee, and wherever the wasp abounds it is a natural consequence that the bee

must be deprived of food, in proportion to the number of wasps which must be supported. In this respect, the common humble-bee should also be destroyed; indeed, I consider the finding of an humble bee's nest as no mean treasure, for as they are, like the common bee, great hoarders of honey, I always rob them of their labor, and give it to my bees, who banquet on it with truly epicurean gluttony. I formerly stationed a boy in my garden to kill all these insects; but experience taught me that it was better to look for their nests, and rather rob than kill them. I thereby added to my own riches."—*Correspondent of the Hereford Times.*

Importance of Railways.—The importance of these undertakings, many of which astonish by their magnitude, is developing itself more fully as each line now in progress is thrown open to the public. A few years since, the man who would have predicted that the journey from London to York would, in the year 1840, be regularly and safely performed in ten hours, would have been set down as a visionary, yet such is now the fact; and when the Great North of England line is opened to Darlington, which is expected to take place in October next, the whole distance from London to that town (nearly 250 miles) will be traversed with great ease in twelve hours! That gigantic work, the Great Western, is now fast approaching towards completion. The Bristol and Exeter is a beautiful line of road, presenting fewer engineering difficulties than any of similar length in the kingdom; but the men of the West are not as yet sufficiently alive to the advantages, agricultural, commercial, and personal, of railways; they would otherwise, long ere this, have arranged for the continuance of the line from Exeter to Devonport and Falmouth. That this will ultimately be effected, there can be no doubt—self-interest will urge it on—the journey from London to Devonport will then occupy about ten hours, so that we may breakfast at home, and dine on the same day with our friends in London! When, therefore, we consider the extraordinary expedition, and the small charge at which journeys are performed on railways, together with the absence of all expense on the road, it is no longer a matter of surprise that the number of passengers, and amount of traffic, so far exceed all calculations previously made on the subject. All the great lines of communication will certainly become sources of great profit to the original shareholders, and from the regularity with which the dividends will be paid every six months, the value of the shares will render them most desirable investments for capital.

Nothing can be more truly national than these undertakings, or more extensively beneficial to all classes of the community; the capitalist largely increases his wealth by giving employment on these works to many thousands of mechanics and laborers, as, out of the many millions raised for the construction and maintenance of railways, above three-fourths are expended in wages of labor alone; and the raw material for the roads, machinery, and stations being nearly all produced in the country, the immense capital employed is retained in the kingdom, thus contributing to the lasting benefit of all.—*West of England Conservative.*

Ledbury.—Since the commencement of the extension of the Hereford and Gloucester canal, many interesting discoveries of horns, bones, teeth, &c., have been made; but to what species of animal they belong has been hitherto a matter of conjecture. During the last week, part of a large tooth, weighing four pounds and a quarter, was found 12 feet below the surface of the ground. From its weight and dimensions, it is supposed to have been that of an elephant, or some animal of gigantic proportions, of which we have no account, and which is probably extinct.

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